

# Malaysian Family Physician

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Official Journal of the Academy of Family Physicians of Malaysia  
and Family Medicine Specialist Association

2018 Volume 13 No. 1



- Hypertension and its association with Anthropometric indices among students in a public university
- Non-Adherence to recommended Pap smear screening guidelines and its associated factors among women attending health clinic in Malaysia
- The views and experiences of Malaysian primary care doctors in managing patients with chronic low back pain: a qualitative study



PP2089/12/2012 (031677)  
ISSN :  
1985-207X (Print)  
1985-2274 (Electronic)



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- Books and other monographs: Corporate Author WONCA International Classification Committee. *International Classification of Primary Care, ICPC-2.* 2nd ed. Oxford: Oxford University Press; 1998.

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## Otorhinolaryngology articles in the *Malaysian Family Physician*

Liew SM

Editor-in-Chief

Dear readers,

This issue of the *Malaysian Family Physician* is packed with otorhinolaryngology articles ranging from a clinical practice guideline for the management of rhinosinusitis in adults<sup>2</sup> to multiple case reports that are of relevance to primary care.<sup>3-8</sup> Patients with otorhinolaryngology problems make up to a quarter of the cases seen in primary care.<sup>1</sup> It is therefore important for family physicians to have a good understanding of the assessment and management of these conditions.

However, the *Malaysian Family Physician* is sent a disproportionate number of articles on particular areas. The articles that are submitted do not represent the breadth of our discipline. In order for us to progress as a platform for research and experiences in Family Medicine, we would like to encourage articles in family medicine itself as well as from other relevant disciplines including ophthalmology, rehabilitation medicine, palliative medicine and so on. We would also encourage the submission of research original articles as these offer a higher level of evidence compared to case reports and test your knowledge articles.

We do have three research original articles in this issue that are particularly relevant to Family Medicine. One paper looks at the association of hypertension and anthropometric indices in university students.<sup>9</sup> Another is a study on non-adherence to Papanicolaou smear screening.<sup>10</sup> Lastly, we have a qualitative study that explored the views and experiences of primary care doctors in managing patients with low back pain.<sup>11</sup>

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# Hypertension and its association with Anthropometric indices among students in a public university

Cheah WL, Majorie Ensayan J, Helmy H, Chang CT

Cheah WL, Majorie Ensayan J, Helmy H, et al. Hypertension and its association with Anthropometric indices among students in a public university. *Malays Fam Physician*. 2018;13(1);2-9.

## Keywords:

Hypertension, young adults, anthropometric indexes

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## Abstract

**Introduction:** The present study aimed to determine the prevalence of hypertension and its association with nutritional status (body mass index, body fat percentage, and visceral fat) among students in a public university in Sarawak, Malaysia.

**Methods:** This was a cross-sectional study among undergraduate students aged 18 years old and above. Anthropometric measurements, such as weight, height, body composition, and blood pressure measurements, were collected. Hypertension was defined as equal or more than 140/90 mmHg. Statistical analyses were done using IBM SPSS version 20.

**Results:** A total of 354 respondents participated in the study. Mean age for the respondents was 21 years (SD 1.18 years). About 40% of the respondents were overweight or obese. Prevalence of hypertension was 8.2%. Mean systolic blood pressure was 119.1mmHg (SD14.36mmHg), and the mean diastolic blood pressure was 72.6mmHg (SD 9.73mmHg). There is a significant association between male gender (odds ratio =3.519, 95% CI is 1.886-6.566), body fat percentage (odds ratio =1.944, 95% CI is 1.050-3.601), visceral fat (odds ratio = 2.830, 95% CI is 1.346-5.951), and family history of hypertension (odds ratio= 2.366, 95% CI is 1.334-4.194) and hypertension.

**Conclusion:** The prevalence of hypertension was less than 10% and is associated with male gender, body composition, and family history of hypertension.

## Introduction

Hypertension is one of the leading causes of disability and death. Globally, in 2014, the prevalence of hypertension in adults was approximately 22%.<sup>1</sup> Men are known to have a slightly higher prevalence of hypertension (21%) as compared to women (16%) in all World Health Organization (WHO) regions.<sup>1</sup> According to the WHO, the age-standardized prevalence of hypertension in adults 18 years and above in Malaysia is 19.6%.<sup>1</sup> Hypertension is well known for being one of the most common risk factors for heart attack and stroke.<sup>2</sup> According to the Malaysian Ministry of Health,<sup>3</sup> in 2013, when considering ischemic heart disease at Ministry of Health Hospitals, the death rate specific to angina pectoris was 1.99 per 100,000 population, and acute myocardial infarction contributed 4.20 deaths per 100,000 population. Due to ill health, the burden of the disease not only impairs a person's capability and productivity, but indirectly leads to smaller economic growth of

the country. Therefore, hypertension affecting a large number of patients in Malaysia creates an economic burden on the health care budget and the nation's economy.<sup>4</sup>

With the presence of risk factors, such as high salt consumption, habitual alcohol intake, sedentary lifestyle, ageing, and stressful life events, which may occur concurrently and act synergistically, individuals may have a higher chance of developing hypertension. This health issue not only affects older adults, but also those who are younger since most people who develop hypertension at an early stage are asymptomatic. A local study by Cheah et al.<sup>5</sup> demonstrated that 7.3% of pre-university students were at risk of hypertension; these were predominantly males. Similar studies carried out in other countries reported a prevalence of hypertension of 7.5-9.3% among university students.<sup>6,7,8</sup> The study by Cheah et al.<sup>5</sup> further suggested that there was a positive relationship between being overweight or obese and the development of hypertension, in which

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those who were overweight, with an unhealthy waist circumference and waist-to-hip ratio, high conicity index, and overfat (unhealthy body fat) were more prone to hypertension, as visceral fat depots are theorised to secrete free fatty acids and proinflammatory cytokines. This is further supported by Mehdad et al.<sup>8</sup>, i.e., that an increase in body mass index is associated with a greater risk of developing hypertension. Similarly, a higher prevalence of hypertension was found among those with higher percentages of body fat, the chief standard determinant of obesity.<sup>9</sup> An excess of body fat, particularly abdominal fat, is linked to cardiometabolic morbidity.<sup>10</sup>

Early identification of risk factors in hypertension, measured by anthropometric indices, can be enhanced in relatively easy and cost effective ways in a local setting. Hence, from this point, intervention can be carried out effectively to reduce disease burden. This study aimed to determine hypertension and its association with anthropometric indices among students in a public university in Kota Samarahan, Sarawak, Malaysia.

**Methods**

This was a cross-sectional study of university students at the University of Malaysia, Sarawak (UNIMAS) carried out from September 2015 until July 2016. The University of Malaysia, Sarawak (UNIMAS) is the eighth university in Malaysia, and the first public and largest university in Sarawak, located in Kota Samarahan, 25 km from the capital city of Sarawak. At the time of the data collection, there were eight faculties at UNIMAS.

The sample size was calculated based on the highest sample size needed for the research objectives. Using OpenEpi version 3.03a, with a sampling frame of 14,500 students, a prevalence of hypertension of 32.7%<sup>12</sup>, and an attrition rate of 10%, a minimum total sample of 364 respondents were needed for this study. Multistage cluster sampling was carried out. Three schools were selected from each of the arts and sciences based discipline, followed by a random selection of cohorts (year, program). Everyone within the chosen cohort was sampled. The inclusion criteria were students who were 18 years and above who had given their consent to participant. Students who were younger than 18 years of age, wheelchair bound, pregnant (for females), and previously diagnosed with hypertension were excluded

from this study.

Socio-demographic profile, family history of hypertension, and programme enrolled in at UNIMAS were collected through a questionnaire. Anthropometric measurements, such as height, were taken using an SECA 213 stadiometer. Weight and body composition (visceral and body fat) were measured using an Omron Model HBF-375 Karada Scan. Three measurements were taken for each indicator, and the nearest two values (nearest to two decimal points) were averaged. Body Fat Percentage (BFP) was classified based on gender, where, for males, the categories were below 10% (Low), 10-19.9% (normal), and equal to or above 20% (high). In comparison to males, the %BFP cut-off points were below 20% (low), 20-22.9% (normal), and equal or greater than 30% (high) for females.<sup>13</sup> Classification of visceral fat was based on manual operation of OMRON Healthcare with ranges of 0.5-9.5 (Normal), 10-14 (High), and 15 and above (very high). Body mass index (BMI) (kg/m<sup>2</sup>) was calculated and classified according to the Clinical Practice Guidelines on Management of Obesity,<sup>14</sup> where <18.5 kg/m<sup>2</sup> is underweight, 18.5-22.9 kg/m<sup>2</sup> is normal, 23-24.9 kg/m<sup>2</sup> is overweight, and ≥25 kg/m<sup>2</sup> is obese.

Blood pressure was measured twice using an Omron HBP-1100 Professional Portable blood pressure monitor. The two measurements of the blood pressure (BP) were taken within an interval of one minute as recommended in the Clinical Practice Guidelines on the Management of Hypertension.<sup>12</sup> If the difference in the BP was more than 5mmHg, one additional reading was taken, and the two readings closest in value (nearest to two decimal points) were used for data entry. The final reading used in analysis was based on the average of the two readings recorded. Calibration was done by selecting 10% of the respondents from each session, taking their BP with digital BP measurements, and calibrating with a manual sphygmomanometer. BP readings were then classified according to the Malaysian Clinical Practice Guidelines for Managements of Hypertension, Fourth Edition, in which hypertension is defined as equal to or more than 140/90 mmHg.<sup>15</sup>

All statistical analyses were performed using the IBM Statistical Package for Social Sciences (SPSS) version 20.0. In terms of descriptive data, percentage, frequency, mean ± standard

deviation (SD) were used. Data was cleaned and checked for normality before proceeding to inferential statistics. Selection of variables for univariate analysis before entering multivariate analysis was based on p value <0.20. Multiple logistic regression was performed to study the association of visceral fat, body fat, family history of hypertension, and gender with hypertension. For all analyses performed in the study, 95 % confidence intervals were used, and a p-value of less than 0.05 was considered to be statistically significant.

Ethical approval was obtained from the UNIMAS Medical Ethics Committee (UNIMAS/NC-21.02/03-02(92)). Approval to conduct the study was granted by the Vice-

Chancellor of UNIMAS. Each participant was briefed on the study, and informed consent was obtained prior to data collection.

### Results

A total of 354 respondents participated in this study, 80.5% of which were females. The mean  $\pm$  SD for the age of respondents was 21.0  $\pm$  1.2 years. The main ethnic group was Malay (48.6%), and the majority of the respondents were from Sabah and Sarawak (53.7%). More than half of the participants were enrolled in an art-based programme (55.4%). Detailed socio-demographic characteristics of the respondents are presented in **Table 1**.

**Table 1.** Socio-demographic characteristics of respondents (n= 354)

	No.	%	mean $\pm$ SD
<i>Gender</i>			
Male	69	19.5	
Female	285	80.5	
Age			21.0 $\pm$ 1.2
<i>Race</i>			
Malay	172	48.6	
Chinese	50	14.1	
Bumiputra Sarawak	72	20.3	
Bumiputra Sabah	38	10.7	
Other	22	6.2	
<i>Place of origin</i>			
Peninsular Malaysia	164	46.3	
Sabah & Sarawak	190	53.7	
<i>Programme of study</i>			
Art	196	55.4	
Science	158	44.6	

The mean  $\pm$  SD of the BFP of the respondents was  $27.5 \pm 6.9$ , the median and inter-quartile range for visceral fat was 5.1 (IQR=4.6). Forty-three percent of the respondents had high or very high body fat; meanwhile, 13.8% of the respondents had high or very high visceral fat. In terms of BMI, the mean  $\pm$  SD was  $23.3 \pm 5.0$  kg/m<sup>2</sup>; however, the result shows that 40.7% (n=144) of the total respondents were classified as overweight or obese. Meanwhile,

the mean  $\pm$  SD for systolic blood pressure was  $119.1 \pm 14.4$  mmHg, and the mean  $\pm$  SD for diastolic blood pressure was  $72.6 \pm 9.7$  mmHg. A total of 8.2% (n=29) of the respondents were found to be hypertensive, and approximately 31.1% of the total respondents were found to have a family history of hypertension (Table 2). Table 3 shows the results of the univariate analysis between hypertension and various factors.

**Table 2.** Nutritional status and health profiles of the respondents (n= 354)

	No.	%	mean $\pm$ SD
<i>Body fat (%)</i>			27.5 $\pm$ 6.9
Normal	202	57.0	
High & very high	152	43.0	
<i>Visceral fat</i>			5.1 $\pm$ 4.6*
Normal	305	86.2	
High & very high	49	13.8	
<i>Place of origin</i>			23.3 $\pm$ 5.0
Underweight	41	11.6	
Normal	169	47.7	
Overweight	41	11.6	
Obese	103	29.1	
<i>Systolic blood pressure (mmHg)</i>			119.1 $\pm$ 14.4
<i>Diastolic blood pressure (mmHg)</i>			72.6 $\pm$ 9.7
Hypertension	29	8.2**	
Family with history of hypertension	110	31.1	

\* Inter-quartile range;

\*\* 95% Confidence Interval (CI) of 1.05-1.11

Logistics regression was used to examine the association between visceral fat, body fat percentage, family history of hypertension, gender and hypertension. Table 4 shows the results of this analysis. The full model containing all predictors was statistically significant,  $\chi^2$  (4, 354) = 49.4,  $p < 0.01$ , indicating that the model was able to distinguish between respondents who had normal blood pressure and those who were hypertensive. This model containing the four independent variables explained between 0.13 (Cox and Snell R-squared) and 0.20 (Nagelkerke R-squared) of the variability in hypertension. It was also able to classify 81.1% of the cases. Table 4 also shows that visceral fat, body fat, family history of hypertension,

and gender had a significant association with hypertension. The odds ratio for visceral fat was 2.83, indicating that those with higher visceral fat values were almost 3 times more likely to be hypertensive. Meanwhile, the odds ratio for body fat was 1.94, indicating that those with higher body fat value were almost 2 times more likely to become hypertensive. In terms of the odds ratio for family history of hypertension, the value is 2.37, indicating that those with a family history of hypertension were more than 2 times more likely to become hypertensive. Finally, the odds ratio for male gender was 3.52, indicating that being male increases the likelihood of becoming hypertensive by almost 4 times.

**Table 3.** Association between hypertension and socio-demographic characteristics and health profile (n=354)

	Normal (n=278)	Hypertension (n=76)	P value
	No. %/mean ± SD		
<i>Gender</i>			27.5 ±6.9
Male	40 (14.4)	29 (38.2)	<0.01
Female	238 (85.6)	47 (61.8)	
<i>Age (year)</i>	20.9±1.19	21.3±1.1	0.06
<i>Race</i>			
Malay	133 (47.8)	39 (51.3)	
Chinese	39 (14.0)	11 (14.5)	
Bumiputra Sarawak	55 (19.8)	17 (22.4)	0.17
Bumiputra Sabah	29 (10.4)	9 (11.8)	
Others	22 (8.0)	0	
<i>Place of Origin</i>			
Peninsular Malaysia	135 (48.6)	29 (38.2)	0.12
Sabah & Sarawak	143 (51.4)	47 (61.8)	
<i>Program of Study</i>			
Art	151 (54.3)	45(59.2)	0.27
Science	127 (45.7)	31(40.8)	
<i>Body fat (%)</i>			
Normal	172 (61.9)	30 (39.5)	<0.01
High & very high	106 (38.1)	46 (60.5)	
<i>Visceral fat</i>			
Normal	254 (91.4)	51 (67.1)	<0.01
High & very high	24 (8.6)	25 (32.9)	
<i>BMI (kg/m<sup>2</sup>)</i>			
Underweight	37 (13.3)	4 (5.3)	
Normal	143 (51.4)	26 (34.2)	<0.01
Overweight & Obese	98 (35.3)	46 (60.5)	
SBP, mm Hg	114.0±11.1	137.5±8.9	<0.01
DBP, mmHg	70.1±7.3	81.5±12.2	<0.01
<i>With Family History</i>			
Yes	76 (27.3)	34 (44.7)	<0.01
No	202 (72.7)	42 (55.3)	

**Table 4.** Logistic regression analysis for factors predicting hypertension

	B	S.E.	Wald	df	Sig	Exp(B)	95% C I for EXP (B)	
							Lower	Upper
Visceral fat	1.04	0.38	7.53	1	<0.01 <sup>a</sup>	2.83	1.35	5.95
Body Fat	0.67	0.31	4.47	1	0.03 <sup>a</sup>	1.94	1.05	3.60
Family History of Hypertension (ref=no family history of hypertension)	0.86	0.29	8.68	1	<0.01 <sup>a</sup>	2.37	1.33	4.19
Male (ref=female)	1.26	0.32	15.63	1	<0.01 <sup>a</sup>	3.52	1.89	6.57

<sup>a</sup> Significant at p<0.05; S.E, standard errors; df, degrees of freedom; Significant p; EXP (B), odds ratio; 95% CI, 95% confidence interval

## Discussion

The prevalence of hypertension in this study was 8.2% (n=29), which falls within the reported prevalence of 7.5-9.3%.<sup>6,7,8</sup> Compared to Cheah et al.'s<sup>5</sup> study in the same location, keeping in mind that Cheah et al. used younger participants (pre-university students), the prevalence of hypertension in this study was found to be higher. This finding indicates that age plays an important role in hypertension, in which aging is associated with the progressive loss of flow-mediated dilatation in the systemic arteries.

In terms of BMI, 40.7% of the respondents in this study were found to be overweight or obese. Based on the National Health and Morbidity Survey 2011,<sup>12</sup> the percentages of overweight and obese adults aged 18 years and above were 33.3% and 27.2%, respectively. The current study indicated a lower prevalence of being overweight and obesity among the undergraduate students, who are younger than the sample used for the national survey. The high percentages of overweight and obese students were associated with a high proportion of high or very high body fat (40.3%). This finding is alarming because the respondents of this study were aged between 18-22 years old, a young-adult population that should be healthier. However, the literature shows that such a phenomena is not uncommon as the younger generation tends to be less physically active with an increasing tendency to consume fast food; this is an escalating pandemic.<sup>16</sup>

The study also found that there is a significant association between hypertension and gender, body fat, visceral fat, and family history of hypertension. The finding whereby BFP and visceral fat have an association with hypertension was similar to the previous studies,<sup>17</sup> in which all the obesity-related indicators, such as BMI, visceral fat, and BFP, were factored into the analysis, and visceral fat and BFP remained independently associated with hypertension. This indicates that the fat in the body and within the organs play a more crucial role in the development of hypertension than body weight itself. The impact of excessive weight on the risk of developing essential hypertension has been well established, as indicated in the Framingham Heart Study, which suggests that obesity's contribution to hypertension was approximately 65% to 75%. Excessive weight is also associated with increases

in regional blood flow, cardiac output, and arterial blood pressure.<sup>18</sup>

Respondents with a positive family history of hypertension also showed a significant association with hypertension. This finding was consistent with a local study that reported that individuals with a positive family history of hypertension are twice as likely to develop hypertension (aOR 1.96, CI 1.59-2.42).<sup>19</sup> Therefore, screening among family members, especially with a family history of hypertension, is vital in detecting those at risk. Hence, with early detection, intervention can prevent further deterioration of the condition.

Gender also contributed to the significant association towards hypertension. There was a greater proportion of males who were hypertensive compared to females; this was consistent with other studies.<sup>5,20</sup> This could be explained by the fact that hormones, such as testosterone, can play an important role in gender-associated differences in blood pressure regulation, as well as have a protective effect, such as oestrogen in females.<sup>21</sup> It was further explained by Celermajer et al.<sup>22</sup> that gender differences can affect the arterial physiology of a human being. Men tend to exhibit a gradual decline in endothelial responses after the age of 40, but a woman's vascular physiology remains normal for another 10 years beyond 40. However, once a woman reaches menopause, the rate of decline in endothelial responses will increase. Hence, women's risk of hypertension will eventually be the same as men's.

The study also showed that respondents with high body fat had odds of almost two times higher of being hypertensive compared to those without high body fat, whereas for respondents with high visceral fat, the odds were almost three times higher of being hypertensive. The detrimental effects of an excessive amount of visceral fat tissue, which cause increases in various cardio metabolic abnormalities independently from concurrent subcutaneous fat, indicate that visceral fat tissue could be a good marker for an increased risk of cardiovascular diseases.<sup>23</sup> In fact, both body fat and visceral fat were rated as better indicators for obesity than BMI. This is because a high proportion of muscle mass may overestimate the BMI, which explains why Mullie et al.<sup>24</sup> recommended a combination of measurement methods, such as BMI and body composition, to reach a more accurate assessment.

Since this study was conducted using UNIMAS undergraduate students, generalization of result will be limited. Nevertheless, the variety of the respondents' places of origin reflects the involvement of all ethnic groups in Malaysia. As this was a cross-sectional study, it has the limitation in drawing conclusion between disease occurrence and risk factors.

In conclusion, the prevalence of respondents who were found to be hypertensive was 8.2%, with 40.7% classified as overweight or obese, 43.0% classified as having high or very high body fat, and 13.8% with high or very high visceral fat. Visceral fat class, body fat percentage, family history of hypertension, and gender were found to have significant association with hypertension. These findings indicate that earlier detection and intervention

should be carried out as soon as possible within the university setting and among the general public. In order to increase awareness of hypertension and other health-related issues, more promotions can be carried out using electronic media and social media networking.

### Competing Interests

The authors declare that they have no competing interests or any possible conflicts of interest regarding the publication of this paper.

### Acknowledgements

The authors would like to thank the university and all the respondents for making this project successful.

### How does this paper make a difference to general practice?

- Earlier screening should be carried out among younger adults to detect those who are hypertensive to ease disease burden.
- Anthropometric indices, which are relatively easy to conduct and cost-effective, can be used to facilitate the detection of hypertension, particularly in the public setting.

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# Non-Adherence to recommended Pap smear screening guidelines and its associated factors among women attending health clinic in Malaysia

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Yunus NA, Harmy MY, Nani D. Non-Adherence to recommended Pap smear screening guidelines and its associated factors among women attending health clinic in Malaysia. *Malays Fam Physician*. 2018;13(1):10–17.

## Keywords:

Pap smear screening; non-adherence; associated factors

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## Abstract

**Introduction:** Cervical cancer ranks as the second most frequent cancer among women in Malaysia. Although a cervical screening program has been introduced since 1960s and is provided free of charge in all government health facilities, the coverage and adherence rate to recommendation among Malaysian women remains low.

**Objectives:** To determine the proportion of non-adherence to Pap smear screening guidelines and its associated factors among women attending a health clinic in Malaysia.

**Method:** A cross sectional study involving 316 women aged 20 to 65 years who had undergone a Pap smear. Universal sampling method was applied to select participants among women who attended the selected health clinic from January 2013 to May 2013. A self-administered questionnaire was used to obtain the socio-demographic characteristics, socio-health data and perceptions about cervical cancer and Pap smear screening. The data was analysed using descriptive statistics and multiple logistic regression.

**Result:** The proportion of non-adherence to Pap smear screening was 90.5%. Age, marital status, duration of marriage, education level, employment, household income and number of children were not significantly associated with non-adherence. Perceived severity, perceived susceptibility, perceived benefit, perceived barrier and cues to action did not show significant association with non-adherence to Pap smear screening.

**Conclusion:** Non-adherence to Pap smear screening was high among Malaysian women. Measures should be taken to increase Pap smear screening coverage in our country. Other factors beyond Health Belief Model that influence Pap smear screening practice among Malaysian women should be explored.

## Introduction

Cervical cancer is one of the most important health issues among women. It is the fourth leading cancer in women worldwide and the second most common cancer among women in Malaysia.<sup>1,2</sup> The number of cervical cancer patients in Malaysia in 2003 was 1557, which accounted for 12.9% of total female cancers. Moreover, the average annual hospital admission for cervical cancer was 2000 to 3000 cases per year, with the majority of them presenting with a FIGO stage II or higher<sup>3</sup>.

Despite all these alarming facts, cervical cancer is a preventable disease when proper screening,

treatment, and follow up is conducted. A Papanicolaou (Pap) smear test, which was introduced in the 1940s, has the ability to detect cervical cancer at the pre-invasive stage.<sup>4</sup> The extensive use of this test has produced a tremendous reduction in cervical cancer incidence and invasive disease in Western countries.<sup>5</sup> Subsequently, the National Cancer Institute of the United States reported that women who have not been screened for cervical cancer were three to ten times at greater risk of developing invasive cervical cancer.<sup>6</sup> Risk also increases with long lapses following the last normal Pap test or with longer screening intervals. As reported by Benedet et al., women who do not have Pap smear screening and those

whose interval between smears is more than 3 years are at the highest risk for developing cervical cancer.<sup>7</sup>

A cervical cancer screening program has been in place in Malaysia since the 1960s.<sup>8</sup> The Ministry of Health Malaysia recommends Pap smear screening for all women between the ages of 20 and 65 years old who are, or who have been, sexually active. If two consecutive yearly tests are negative, subsequent screening can be done every three years.<sup>9</sup> The focus groups for the program are women who receive family planning help or attend maternal and child health clinic.<sup>8</sup> Although the test is widely available and given for free at public health clinics, this program has failed to achieve satisfactory screening coverage and a reduction in incidences of cervical cancer due to its opportunistic nature<sup>10,11</sup>. In the last five years, Pap smear coverage in Malaysia remains around 22% of estimated eligible women.<sup>12</sup> Whereas, among cervical cancer patients diagnosed at eight major hospitals in Malaysia, 48% reported never had a Pap test, while 95% did not have the test within the last three years.<sup>3</sup>

One of the common theoretical models used to understand patients' practices towards preventive behavior is the Health Belief Model (HBM). It is a conceptual model that focuses on peoples' perceptions about their illness, beliefs and actions related to prevention of the disease, and how it affects their health.<sup>13</sup> It was created by psychologists at the United States Public Health Service in the 1950s to understand why people could not accept disease preventive activities.<sup>13</sup> The model covers five domains, which are; perceived susceptibility, perceived severity, perceived benefit, perceived barrier, and cues to action. **Figure 1** describes these five domains to distinguish features of each domain. It has been extensively used as a conceptual framework in many health behavior studies to understand individual health beliefs and intervene in cancer screening behaviors.<sup>14,15</sup> HBM was also used in a local study by Baskaran et al. at the outpatient department of one public university hospital in Kuala Lumpur to determine the correlation between demographic data and perceived susceptibility, perceived benefit, and perceived barriers for cervical cancer screening.<sup>16</sup>

**Figure 1:** Key domains in the Health Belief Model<sup>13</sup>

***Perceived susceptibility:***

This is the perception of one's own personal risk of developing a particular condition, and it involves a subjective evaluation of risk.

***Perceived severity:***

One's belief of how serious a condition and its sequel are. This is the degree to which the person attributes negative medical, clinical, or social consequences to being diagnosed with an illness.

***Perceived benefits:***

One's belief in the efficacy of the advised action to reduce risk or seriousness of impact. It is the belief about the effectiveness of different actions.

***Perceived barriers:***

One's beliefs about the tangible and psychological cost of the advised action and the potential negative aspects of a particular action

***Cues to action:***

Strategies that people carry out to activate the preventive action, like publicity or bodily events.

Cervical cancer screening is a formidable challenge in Malaysia. Lack of knowledge and incorrect beliefs about Pap smear screening are among the contributing factors to poor screening uptake.<sup>10,17,18</sup> Therefore, the purpose of this study is to determine the non-adherence rate of Pap smear screening guidelines in Malaysia, evaluate the women's perceptions about cervical cancer and Pap smear screening, and assess the association between their beliefs and Pap smear screening practice.

## Methods

This was a cross-sectional study conducted from January to May 2013 at Klinik Kesihatan Bandar Kota Bharu, in Kelantan, Malaysia. The sample size was calculated using the single proportion formula with an assumption of 40.3% non-adherence.<sup>19</sup> A final sample size was adjusted to 334 after factoring in a 30% non-response rate. This study used the convenience sampling method in view of the feasibility of obtaining an adequate sample.

All women who attended this clinic during the data collection period and fulfilled the inclusion criteria were invited to join the study. They were recruited by nurses who had undergone briefing and training for data collection. There were four points of data collection, which were the outpatient unit, maternal and child unit, extended scope clinic, and chronic disease unit, with one appointed nurse at each point. The inclusion criteria were women between the ages of 20 and 65 years old, who had Pap smear screening at least once and for whom the first Pap smear test was done in 2008 or earlier. Women who had history of cervical cancer were excluded from this study. The year 2008 was decided as the cut-off point in order to identify women who fulfilled the definition of adherence. In this study, 'adherence' was defined according to Malaysian cervical cancer screening guidelines, which were that the interval between the first Pap test and the second Pap test should be one year, and that the interval between subsequent tests after the second consecutive test should be every three years.<sup>9</sup> For example, a woman who had her first Pap test in 2008 should have had the second test in 2009 and the third test in 2012 if the first two tests were normal. Therefore, this woman would be considered adherent. Women who did not follow this schedule would be considered non-adherent.

During the data collection period, the purpose and conduct of the study was explained to the participants, and the confidentiality of the data was assured. One set of self-administered questionnaires, which consisted of sociodemographic data, socio-health data, and an HBM questionnaire, was given to each participant. Socio-health data provided information about the years when the Pap test were done to assess adherence to Pap smear screening guidelines.

The HBM questionnaire was developed based on the HBM theory to assess beliefs related to cervical cancer and Pap smear screening. Based on literature reviews on factors influencing Pap smear screening practice, 50 initial items were identified and grouped into the five domains of the HBM. All items were constructed in the Malay language because the majority of the targeted population was Malay. Series of discussions with three Family Medicine Specialists were carried out to ensure good content validity and comprehensiveness of the questions. The questions were also reviewed by 15 medical officers and nurses for face validity. A pilot study was conducted at five health clinics in Kelantan, which involved 50 women who attended the clinics during this period. The data was analyzed for internal consistency using Cronbach's alpha and exploratory factor analysis to evaluate the construct validity. Five items were eliminated due to low factor loading, which were 'abnormal Pap test leads to cancer cervix,' 'possibility of getting abnormal Pap test when the previous test was normal,' 'benefit from regular Pap test,' 'Pap test was not done at closed area,' and 'get individual invitation to do the test.' The final questionnaire consisted of 45 items with Cronbach alpha and factors loading, as seen in Table 1. The questions were scored using a 4-point Likert Scale, except for the 'cues to action' domain. For the perceived severity, susceptibility, and benefit domains, the scoring was 4 for 'strongly agree,' 3 for 'agree,' 2 for 'disagree,' and 1 for 'strongly disagree.' The scoring was reversed for the perceived barrier domain. Cues to action was scored with 1 for 'Yes,' and 0 for 'No' and 'Not applicable.' The scoring is explained in Table 1. The mean score for each domain was calculated for comparison.

**Table 1:** Health Belief Model Questionnaire validation and scoring for each domain

Domains	Initial items	Final items	Factor loading	Cronbach alpha	Minimum score	Maximum score
Perceived severity	10	9	0.47 – 0.79	0.80	9	36
Perceived susceptibility	9	8	0.50 – 0.88	0.82	8	32
Perceived benefit	7	6	0.57 – 0.84	0.94	6	24
Perceived barrier	17	16	0.48 – 0.83	0.91	16	64
Cues to action	7	6	0.59 – 0.77	0.77	0	6

Data entry and analysis were done using the SPSS software for Windows Version 20. All variables with *p*-value less than 0.25 on bivariate analysis and clinical importance were included in the multivariate analysis. The significance level for multivariate analysis was set at 0.05 with 95% confident intervals.

This study obtained approval from the ethical committee of the University Sains Malaysia (USM/KK/PPP/JEPeM[252.4.(1.3)]) and the

Malaysia National Medical Research Register (NMRR-12-1009-12471).

### Results

A total of 334 eligible women were offered a chance to participate in this study. However, only 316 women agreed, giving a response rate of 94.6%. Socio-demographic characteristics of the participants are shown in **Table 2**.

**Table 2.** Socio-demographic characteristic of the participants (n=316)

Characteristic	n (%)	Mean (SD) <sup>a</sup>
Age		41.2 (9.21)
<i>Marital status</i>		
Married	305 (96.5)	
Widow	11 (3.5)	
Duration of marriage		17.8 (9.18)
<i>Education level</i>		
None	4 (1.3)	
Primary	14 (4.4)	
Secondary	206 (65.2)	
Diploma	79 (25.0)	
Degree/Masters/PhD	13 (4.1)	
<i>Occupation</i>		
Employed	205 (64.9)	
Unemployed	111 (35.1)	
<i>Household income</i>		
<RM1000	142 (44.9)	
RM1000 – RM5000	155 (49.1)	
>RM5000	19 (6.0)	
No. of children		3.9 (1.85)

<sup>a</sup> Standard deviation

Of the 316 participants, 286 women were found to be non-adherent to screening guidelines, resulting in a prevalence of 90.5%, while 132 women (41.8%) reported having a Pap smear test within the last 3 years (**Table 3**).

**Table 3:** Prevalence of non-adherence to Pap smear screening, and recent Pap test within 3 years (n=316)

Outcome	n (%)
<i>Adherence to Pap smear screening guidelines</i>	
Did not adhere	286 (90.5)
Adhered	30 (9.5)
<i>Have had a Pap test within 3 years</i>	
Yes	132 (41.8)
No	184 (58.2)

*Health Belief Model domains*

The mean scores for all HBM domains do not show a significant difference between the group that adhered and the group that did not, as shown in **Table 4**. The largest difference is in the 'perceived susceptibility' domain, with merely a 1.04 point difference between the two groups.

'Perceived severity' and 'perceived benefit' have the same difference, 0.41, while 'cues to action' has a difference of 0.15. In all the aforementioned domains, the group that adhered scored higher. In comparison, the difference of scores of the two groups for 'perceived barrier' is 0.08 with the non-adhering group scoring higher than the group that adhered.

**Table 4.** Mean total score for Health Belief Model domains between the group that adhered and the non-adhering group (n=316)

Domains	Mean (SD) <sup>a</sup>		95% CI	p value <sup>b</sup>
	Non-adhering (n=286)	adhering (n=30)		
Perceived severity	27.19 (3.70)	27.60 (3.52)	-0.98, 1.80	0.564
Perceived susceptibility	24.09 (2.92)	25.13 (2.37)	-0.04, 2.13	0.060
Perceived benefit	19.92 (2.45)	20.33 (2.63)	-0.52, 1.35	0.380
Perceived barrier	34.95 (7.69)	34.87 (8.22)	-3.00, 2.84	0.957
Cues to action	4.05 (1.53)	4.20 (1.35)	-0.42, 0.73	0.596

<sup>a</sup> Standard deviation

<sup>b</sup> Independent t-test

Simple logistic regression analysis is shown in **Table 5**. Multivariate analysis reveals no significant association between sociodemographic variables and HBM domains with non-adherence to Pap smear screening.

**Table 5:** Association between socio-demographic factors and non-adherence to Pap smear screening by Simple Logistic Regression

Variables	SLR <sup>a</sup>	
	Crude OR (95% CI)	p value
<b>Sociodemographic variables</b>		
Age	1.00 (0.96,1.04)	0.985
<i>Marital status</i>		
Married	1.0	
Widow	0.46 (0.09,2.21)	0.329
Duration of marriage	1.01 (0.97,1.06)	0.525
<i>Education level</i>		
None/primary	1.0	0.599
Secondary	0.49 (0.06,3.88)	0.501
Tertiary	0.71 (0.08,6.19)	0.760
Occupation	0.93 (0.43,2.03)	0.853
<i>Household income</i>		
<RM1000	1.0	0.770
RM1000-RM5000	0.89 (0.41,1.89)	0.735
>RM5000	1.18 (0.22,14.71)	0.577
No. of children	0.98 (0.80,1.20)	0.828
<b>Health Belief Model domains</b>		
Perceived severity	0.97 (0.87,1.08)	0.563
Perceived susceptibility	0.89 (0.79,1.01)	0.062
Perceived benefit	0.94 (0.81,1.09)	0.379
Perceived barrier	1.00 (0.95,1.05)	0.956
Cues to action	0.99 (0.98,1.01)	0.553

<sup>a</sup> Simple logistic regression

## Discussion

This study revealed a very high rate of non-adherence to Pap smear screening among Malaysian women (90.5%). Although there is no previous local study on screening adherence to compare with, the high non-adherence rate was expected as the screening coverage in our country is very low.<sup>10,12</sup> An annual report by the Malaysia Ministry of Health revealed that national cervical screening coverage remained at 22% from 2010 to 2013 despite the availability of the test since 1960s.<sup>12</sup> Meanwhile, a much lower non-adherence rate of 16% to 30% was observed in developed countries, where the screening coverage is much higher than in their developing counterparts, such as Malaysia.<sup>20-22</sup> Previous survey in 57 countries by the World Health Organization reported only 19% screening coverage in developing countries as compared to 63% in developed countries.<sup>22</sup> This huge difference in screening coverage might be an important contributing factor to the low adherence in developing countries, including Malaysia.

All socio-demographic variables tested in our study failed to show any significant association with Pap smear screening adherence. Previous studies also showed conflicting results in terms of association between age with Pap smear screening adherence.<sup>20,21,23</sup> Nelson et al. and Shelton et al. failed to demonstrate any association between age and adherence to cervical cancer screening in their studies.<sup>20,21</sup> In comparison, a systematic review by Limmer et al. reported that there were seven studies that concluded that younger women were more adherent, and that there were other studies that showed higher adherence among older women.<sup>23</sup> The inconsistency in study findings might be due to heterogeneity in the age of the study population and difference cut-off points used in classifying age groups.

Marital status was not a significant determinant to screening adherence in our study. Similarly, in a previous study by Shelton et al. among immigrants to the United States, it was reported that there was an inconsistent association between marital status with adherence across four sub-groups of the immigrants.<sup>21</sup> The study also showed that the influence of marriage on the social role and perception of a woman might be different across regions and ethnicities. While being married was frequently found as a significant associated factor for cervical cancer screening uptake among

Malaysian women,<sup>17,24</sup> it might not influence the adherence to the screening guideline, as evidenced in our study.

Although it was not demonstrated in our study, prior studies showed socioeconomic indicators, such as education level, income, and employment, influenced Pap smear screening uptake and adherence.<sup>23,25</sup> Several local studies also revealed that education level and employment status were associated with a tendency for screening among Malaysian women.<sup>3,16</sup> However, intentions may not always translate into practice. Women with higher socioeconomic status might come in for a Pap test, but they might not adhere to the recommended schedule, as demonstrated in our study. Hence, continuous health promotions about Pap smear screening need to be regularly emphasized to all eligible women, regardless of socioeconomic background, to ensure adherence.

HBM is a conceptual model used to explore the relationship between health beliefs and health behaviours. This model has been used extensively in various health-related behaviour studies, such as compliance with breast cancer screening and predicting dietary habits.<sup>26,27</sup> The use of the HBM in understanding the factors influencing cervical cancer screening practices has been reported in many studies.<sup>15,28,29</sup> but a limited number of studies used this model to look at the association with cervical cancer screening adherence. The present study used HBM as the framework to explore the factors influencing non-adherence to cervical cancer screening in our population, but our findings showed contradicting results from HBM principles. We found that the adherence to cervical cancer screening in our population was not influenced by any of the five domains of the HBM. Similarly, a study among Thai women also failed to show a relationship between perceived threat (which included perceived susceptibility and severity), perceived benefit, and cues to action with cervical cancer screening adherence.<sup>30</sup> However, the former study reported a significant association between 'perceived barrier' and cervical cancer screening adherence, which was not evident in our study.<sup>30</sup> On the other hand, Shelton et al. showed inconsistent association between barriers with cervical cancer screening adherence across four sub-groups of immigrants in their study.<sup>21</sup> This discrepancy in the results could be due to the barriers of concern in one population being different from those in

other populations. Moreover, as reported by Abdullah et al. in their study, the perceived barrier faced by Malaysian women who did not undergo a Pap smear or did not repeat the test as scheduled was minimal.<sup>29</sup> Thus, there must be other factors apart from perceived barriers that hinder the women from undergoing or maintaining cervical cancer screening.

In addition, as preventive behaviour is a complex process, factors influencing screening habits need to be studied from various angles. Although HBM is useful for describing reasons for problem from the perspective of patients' beliefs, our study and a few more studies failed to demonstrate significant association between HBM domains and non-adherence to Pap smear screening.<sup>21,30</sup> This shows that people's perceptions do not necessarily translate into practice. Moreover, HBM theory focuses on individuals as one unit of change, whereas health behaviours are effects of various levels of influence, such as intrapersonal influence, institutional factors, community factors, and public policy.<sup>31</sup> For example, 'subjective norms,' which are social standards and motivations to comply with those norms, are studied in the Theory of Planned Behaviour, but not covered in HBM.<sup>32</sup> Therefore, addressing issues of non-adherence in Pap smear screening might require more than one theory, since there may be no single theory which is suitable for all cases. Hence, further study is required to explore other possible factors contributing to non-adherence to Pap smear screening guidelines.

### Limitations

Like any other study, this study is not exempt from limitations. Firstly, a cross-sectional study utilizing convenience sampling might lead to

bias, thus decreasing the potential to generalize the results to other populations. Furthermore, the data relied on self-reported practices of Pap smear screening, which might be over- or under-reported by the participants. Finally, this study only explored women's perception based on HBM. There may be other important factors that influence screening habits which are not covered in this model, such as system factors and social norms.

### Recommendation

As clearly demonstrated in this study, the proportion of non-adherence to Pap smear screening among Malaysian women is high. Therefore, Pap smear screening programs should be more proactive in order to increase the screening coverage in Malaysia. More quality indicators for screening monitoring are also required in our system. The number of Pap smear samples alone is not an adequate indicator with which to monitor screening coverage. A more precise indicator, such as 'percentage of eligible women in the target population who have Pap smears' and 'percentage of eligible women who repeat the test after 3 years of negative Pap smear results,' may be more meaningful in monitoring Pap smear screening coverage in our country. On the other hand, other factors beyond the HBM that influence Pap smear screening uptake in our population must be explored.

### Acknowledgements

We would like to thank the Director General of Health Malaysia for his permission to publish this article. Our gratitude also goes to all of the participants, health clinic staff, and others who assisted with this study.

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# The views and experiences of Malaysian primary care doctors in managing patients with chronic low back pain: a qualitative study

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Hani SS, Liew SM. The views and experiences of Malaysian primary care doctors in managing patients with chronic low back pain: a qualitative study. *Malays Fam Physician*. 2018;13(1):18–24.

## Keywords:

Primary care, low back pain, chronic

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## Abstract

**Background:** Chronic low back pain (CLBP) is a common and often difficult to treat condition in the primary care setting. Research involving in-depth exploration on the views and experiences faced by primary care doctors in managing patients with CLBP in Malaysia is limited.

**Objective:** To explore the primary care practitioners' views and experiences in managing patients with CLBP.

**Study design:** A qualitative approach was employed using focus group discussions (FGD) at an academic primary care clinic in Kuala Lumpur, Malaysia. Twenty-three primary care doctors were purposively selected. Data were collected through audio-recorded interviews, which were transcribed verbatim and checked for accuracy. Data saturation was reached by the third FGD. An additional FGD was included to ensure completeness. A thematic approach using the one sheet of paper (OSOP) method was used to analyse the data.

**Results:** Participants view managing patients with CLBP as challenging. This is mainly due to the difficulty in balancing the doctors' expectations with the patients' perceived expectations during consultation. Barriers identified include lack of awareness and conflicting views regarding the usefulness of the local clinical practice guideline (CPG) in clinical practice. Other barriers include time constraints and perceived lack of support from multidisciplinary teams in managing these patients.

**Conclusion:** Managing patients with CLBP is still a challenge for Malaysian primary care doctors. Any intervention should target identified barriers to improve the management of patients with CLBP.

## Introduction:

Chronic low back pain (CLBP) is a major cause of morbidity worldwide. Back pain accounted for 1.3% of the estimated 214 million visits to primary care physicians in the United States in 2010.<sup>1</sup> The prevalence of low back pain in developed countries is estimated to range from 10 to 31%.<sup>2,3</sup> In Malaysia, the prevalence of back pain was found to be 12%, and it was rated as the ninth and fifth most common complaint in public and private primary healthcare clinics, respectively, between August to November 2012.<sup>4</sup> In terms of cost, closer to home, Japan spent approximately 2.7 billion yen in direct costs and another 3.3 billion yen in indirect costs managing low back pain, between 1991 to 1995.<sup>5</sup> To date, there is limited data on cost analysis for low back pain in Malaysia.

Chronic back pain is defined as back pain persisting for more than 12 weeks.<sup>6</sup> Compared to acute back pain, the management of chronic low back pain may take years with significant morbidity. It causes pain, diminished mobility, work absenteeism, and is a burden on the healthcare system.<sup>3,5,6</sup>

Despite the abundance of guidance available, CLBP still poses considerable challenges and frustrations for both patients and health care practitioners.<sup>6,7</sup> In Malaysia, the local clinical practice guideline (CPG) on management of low back pain was first introduced in 2010 by the Malaysian Association for the Study of Pain.<sup>6</sup> As this guideline was constructed by experts in the area of pain management, it targets pain management, rather than holistic care, for patients with CLBP.

In Malaysia, studies conducted on low back pain were mainly examining its prevalence, causes, and risk factors.<sup>8</sup> There is limited evidence on CLBP management using a holistic approach at the primary care level. In actuality, the majority of CLBP patients are treated in primary care clinics.<sup>7</sup> Thus, exploring the primary care practitioners' perspectives on and understanding of the management of CLBP is important in terms of initiating future efforts to improve delivery of care to patients with CLBP. Hence, we aimed to explore primary care practitioners' views and experiences in managing patients with CLBP in Malaysia.

#### **Study design:**

A qualitative study design was employed. This study used face-to-face focus group discussion (FGD) among primary care doctors in a hospital-based primary care clinic.

#### **Setting and population:**

This study was carried out in a hospital-based primary care clinic in central Kuala Lumpur, Malaysia. This primary care setting provides comprehensive services to an ethnically-diverse population from different socio-economic backgrounds in Kuala Lumpur.

The setting and participants were purposely selected as this is an academic centre that trains primary care physicians who will subsequently be posted throughout the country. They will go on to be guideline developers, and leaders and trainers of future primary care physicians.

#### **Sampling:**

We used purposive sampling to recruit primary care doctors. A total of 23 primary care doctors were interviewed who had from 6 to more than 20 years of working experience (**Table I**).

The participants were primarily post-graduate trainee physicians, and a few were non-trainee physicians. Each focus group comprised 5-7 participants selected based on similarity of working experiences and years in the master program. This was done to facilitate group interactions. All participation was voluntary.

#### **Data collection:**

All FGDs were carried out and moderated by the researcher (HS). A semi-structured

interview guide was developed containing a list of open-ended questions covering broad themes designed to address study objectives. More specifically, we formulated the questions for this guide based on the construct of the Theory of Planned Behaviour (TPB).<sup>9</sup> The Theory of Planned Behaviour explores the relationship between attitudes, normative beliefs, and perceived behaviour control and how these aspects affect the intentions and later mould the behaviours of primary care doctors in managing CLBP.<sup>9</sup> Questions to uncover attitudes, subjective norms and perceived behaviour control were formulated to gain understanding on how these factors affect the intentions and behaviours of primary care doctors in a consultation.<sup>9</sup>

The FGDs were not restricted to the questions in the semi-structured interview guide, and the participants were allowed to bring up topics that they felt were important. The guide was tested for clarity and refined after a pilot interview, which was carried out before the actual data collection.

The interviews were done in English and lasted for between 45 minutes and an hour. Informed consent for participation and audio-recording was obtained from the outset. The interviews were then transcribed verbatim by two transcribers, and all identifiers were anonymised.

A note taker was present during the interviews to document non-verbal cues and capture participants' identities for transcribing. These observations served as field notes and were also used to note participants' behaviours during the interviews and the overall impressions of the interviewer.

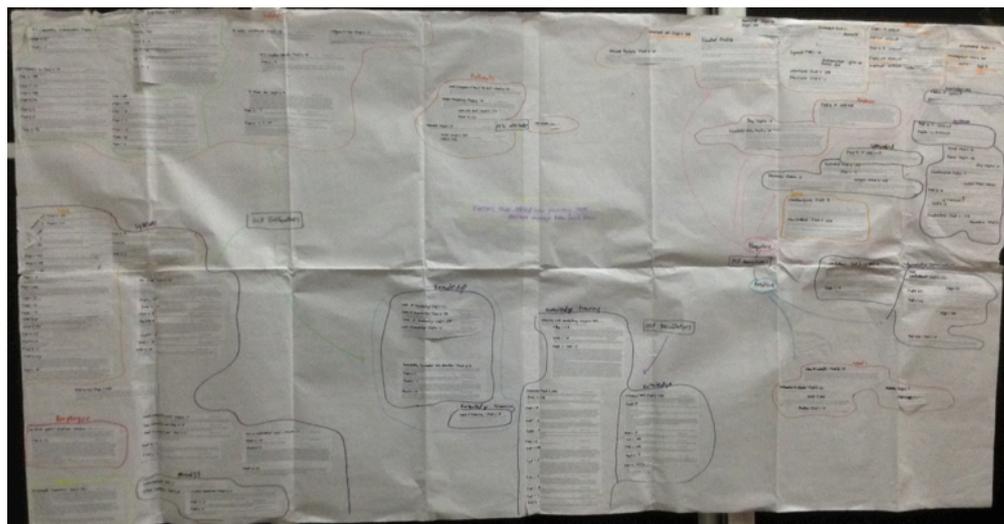
#### **Data analysis:**

Data analysis was an ongoing process which started during data collection and proceeded iteratively. A thematic analysis technique was employed, and themes were derived from the construct of the TPB and responses.<sup>9</sup> As mentioned, interviews were transcribed by two persons and read repeatedly to gain overall understanding. The text from the transcripts was then coded independently by two coders, HS and LSM, using the derived themes. Coding was a data reduction process and aimed to classify all the data so that it could be compared with other sets of interviews.<sup>10</sup> Discussions between HS and LSM were used

to resolve any discrepancies with the open coding. They also discussed and checked the labelling of the coding framework. Following the open coding, codes were examined using OSOP (one sheet of paper) analysis.<sup>11</sup> This was accomplished by grouping specific quotations according to relationships or linkages within a code. A NVivo report was created using the

software package NVivo 10 which consisted of all the different issues brought up by the participants. This was then noted on a single sheet of paper, along with the relevant respondent coded identities. The transcript was then rechecked for any data which was not included in the NVivo report, and any relevant data was added into the OSOP (**Figure I**).

**Figure I:** One-sheet of paper (OSOP) analysis



When the OSOP was completed, a summary of all the relevant issues was created and relationships examined. The next step was to group the issues into broader themes and, finally, main themes. The main themes were then compared with the Theory of Planned Behaviour framework and other existing data in the literature.<sup>9</sup> NVivo 10 allows the organization of quotations into different codes to identify co-occurring codes, and the OSOP approach allows the researcher to make theoretical links within the data set and axial coding. Axial coding is a process of grouping the open codes together into different themes and sub-themes after a process of interpretation of and reflection on the meaning the codes carry. The additional themes and subthemes were re-analysed, and similar subthemes were merged. The whole research process was repeated again and again in an iterative process. Data analysis took place during data collection to ensure data saturation was reached. Primary care physicians continued to be recruited until

this occurred. Saturation is a point at which no new or relevant themes emerge during the data collection process.<sup>12</sup> Data saturation was reached by the interview of FGD 3, and the interview of FGD 4 did not yield any new themes.

#### **Ethical consideration:**

Ethical appraisal was obtained from the Ethics Committee of the University of Malaya (MECID NO: 20143-63). Written informed consent to participate in the focus group interviews and have non-identifiable information appear in journal publications was obtained from participants prior to the interviews.

#### **Results:**

Of the 23 participants, there were six men and 17 women aged between 30 to 64 years of age (**Table I**).

**Table I:** Participants' Profile

FGD	Participants	Age	Gender	Ethnicity	Nationality	Years of working experience
FGD 1	P1	36	Male	Indian	Malaysian	11 years
	P2	30	Female	Malay	Malaysian	7 years
	P3	35	Female	Indian	Malaysian	7 years
	P4	33	Female	Malay	Malaysian	9 years
	P5	35	Male	Chinese	Malaysian	9 years
	P6	32	Female	Malay	Malaysian	7 years
	P7	32	Female	Malay	Malaysian	7 years
FGD 2	P8	32	Female	Malay	Malaysian	7 years
	P9	34	Male	Malay	Malaysian	9 years
	P10	34	Female	Malay	Malaysian	10 years
	P11	32	Female	Malay	Malaysian	8 years
	P12	31	Female	Chinese	Malaysian	6 years
FGD 3	P13	35	Female	Malay	Malaysian	9 years
	P14	32	Female	Chinese	Malaysian	6 years
	P15	33	Female	Indian	Malaysian	7 years
	P16	31	Male	Chinese	Malaysian	6 years
	P17	30	Female	Chinese	Malaysian	5 years
	P18	32	Female	Malay	Malaysian	7 years
FGD 4	P19	57	Female	Indian	Other	35 years
	P20	64	Male	Other	Other	37 years
	P21	61	Male	Other	Other	30 years
	P22	50	Female	Other	Other	28 years
	P23	58	Female	Indian	Malaysian	30 years

Four main themes emerged from the analysis of the barriers in managing patients with CLBP. They are as follows.

### **Theme 1: Mismatched expectations between doctors and patients**

#### **Subtheme 1: Matched expectations leads to satisfaction**

Participants had expectations of outcomes to be achieved in a consultation for low back pain. If these expectations were met, this created satisfaction. One of the expectations that a number of participants expressed was the ability to explore the patients' expectations.

*"Firstly, we should ask; what are the concerns of the patients? Why did the patients come? What has been done before? And what are his expectations from us [doctors]? Then you address it" (P22, FGD 4)*

Other expectations included being able to alleviate patients' chronic pain, and to

categorize patients into those needing urgent and non-urgent treatment.

*"We need to see whether there is any alarming symptom in patients who present with chronic low back pain. If there is none, that's ok, non-urgent. If there is an alarming symptom, we need to refer urgently for treatment. So, that is the main expectation. I think most of us clinicians want to find out whether this case needs urgent treatment or not." (P5, FGD 1)*

#### **Subtheme 2: Unmatched expectations lead to frustration**

However, when some of these expectations were not aligned with the perceived patients' expectations, it created frustrations among the participants. These frustrations were seen as obstacles to managing these patients. Frustrations were also expressed with the use of different words such as difficult, limited, heart sunk, and giving up. Other emotions expressed, such as feeling powerless, irritated, stressed, and annoyed, were also used to describe how these participants felt in a

situation where they were struggling to find common ground in terms of management plans with the patients.

*“I always find it frustrating when dealing with the patients’ expectations. It’s an obstacle to manage these patients. It’s like trying to hit a brick wall if someone already wants something, and they will not move from the chair to get it done.” (P13, FGD 2)*

The participants expressed difficulty in managing perceived patients’ expectations, such as requests for medical certificates, hidden agendas, or investigations, including imaging. Some physicians stated that patients came to the clinic with preconceived beliefs that an investigation such as imaging was the only way to discover the root of their problems.

*“The sole purpose of the patients coming to the clinic is to get the X-ray done. They will request investigation straight-away. They [patients] say that the x-ray or MRI can visualise the spine and any spinal pathology. With our [doctors] assessments alone, we may miss the problems.” (P7, FGD 1)*

Sometimes patient behaviour that was seen as rude or threatening contributed to frustrations among the participants.

*“I’m stressed out when patients start to act rudely in a consultation.” (P10, FGD 2)*

Primary care doctors in this study will give in to patients’ demands due to several reasons. These include perceived difficulty in changing patients’ mind-sets, feeling obligated to fulfil these demands in order to maintain a good doctor-patient relationship, and to prevent patients’ complaints to higher authorities.

*“Some patients, they insisted for something to be done to the extent that they will threaten us. They want to make complaints to the higher management if you refuse to do it. At this point, you have to oblige.” (P6, FGD 1)*

Although numerous negative emotions surfaced in the management of patients with CLBP, some also felt happy if the patients that they managed felt better, were easy to deal with, or behaved nicely towards them in the decision-making process. Some participants felt frustrated when confronted

with demanding patients who controlled the consultation, while others felt that this was a motivation for them to learn and seek evidence-based knowledge regarding management of back pain. Some participants pointed out that they felt more confident and clinically competent when their clinical findings tallied with the radiological findings.

*“Sometimes, you feel good when what you suspected from your examination tallies with the radiological findings. Not good for the patients, but at least it proved that you are clinically competent, and it increased my confidence.” (P1, FGD 1)*

## **Theme 2: Time as a challenge in managing patients with chronic low back pain**

### **Subtheme 1: Time constraints can be frustrating**

Most participants verbalized their frustrations when it came to time spent managing patients who present with CLBP. They felt that history-taking was a long process as CLBP is a long-standing condition needing a thorough physical examination. Some participants resorted to not performing even a basic physical examination. However, other doctors, even though their time is limited, felt that it was their responsibility to take a proper history and conduct a careful examination in order to help the patients.

*“It’s not that we [doctors] have a lot of time. But I feel obliged as it’s my responsibility to take a proper history and examine the patients. The patients come to me to seek help and they trust me to treat them. So, I will usually take the history and examine them.” (P10, FGD 2)*

## **Theme 3: Doctors’ perceptions on the local clinical practice guideline (CPG) on low back pain**

### **Subtheme 1: Lack of awareness about a CPG on low back pain**

Most participants were unaware of the existence of a local clinical practice guideline (CPG) on managing low back pain. One participant possessed a copy of the guidelines but had never read it.

*“Seriously? We have a CPG?” (P8, FGD 2)*

### Subtheme 2: Lack of practicality for use in clinical practice

There were participants who felt that the clinical practice guidelines were impractical to use in daily clinical practice. They believed that the guidelines only provided them with an algorithm to manage the patients, but that nothing was mentioned on how to deal with patients' concerns and expectations.

*"In the low backache guideline, they have the algorithm on how to approach acute and chronic low back pain. I think the algorithm can be followed, but whether it helps the patients, I don't think so. I don't think this guideline talked about patients' expectations and patients' concerns."* (P20, FGD 4)

There were those who decided not to follow the guideline recommendations, while others followed them, but felt that, by doing so, they were not able to fulfil the patients' expectations, and thus created dissatisfaction.

*"We may be satisfied as we followed the recommended guidelines and we are not missing anything. But the recommended guidelines don't cater for the patients' expectations. They [patients] may not be satisfied."* (P15, FGD 3)

However, there were some primary care doctors who felt that the clinical practice guideline helped in terms of improving knowledge regarding diagnosis, providing a structured approach for the consultation, and defending their clinical management when questioned.

*"In a way, guideline's recommendations are quite useful because it made me more structured when I see my patients."* (P10, FGD 2)

### Subtheme 3: Lack of a target to be achieved in a consultation

A participant stated that guidelines for other conditions, such as diabetes and hypertension, provided them with targets to achieve, but this was missing in the local guidelines for CLBP management. Most felt that managing patients with CLBP is about managing the patients' expectations. Some felt that the guidelines were created by highly specialized personnel and that the recommendations were very hard to follow.

*"The guideline's recommendations give you*

*the recommendations on how to approach for chronic low back pain, but you can't practice that. Because the guideline was done by super-specialized heroes [specialists and consultants]. It is difficult for us in primary care practice to follow it [the guideline's recommendations]."* (P19, FGD 4)

### Subtheme 4: Lack of emphasis on complementary and alternative medicine

As not much emphasis is made in the guidelines regarding complementary and alternative medicine (CAM) in the country, some participants in this study refrained from discussing massages and chiropractic therapies in managing CLBP due to their lack of knowledge regarding these therapies. Some discouraged the use of alternative medications and herbs as they worried that these medications might contain an unknown dose of steroid. A participant mentioned that she had to admit to her patients that she lacked knowledge regarding acupuncture when she was asked about the efficacy of the treatment.

*"I have patients who asked me about acupuncture. I just told them that I don't have good knowledge about alternative therapies. So, I cannot tell them whether it can help them with their chronic back pain or not. Maybe they [the patient] can just try."* (P15, FGD 3)

### Theme 4: Doctors' perceptions of the management of patients with chronic low back pain

#### Subtheme 1: Lack of a multidisciplinary approach

The participants perceived that a multidisciplinary approach is lacking in the management of patients with CLBP despite this being emphasised in the local CPG. At the primary care level, some felt that the services they could offer were limited and thus felt powerless when patients presented to them with CLBP. The participants felt they were not well-supported in the management of CLBP. In their opinion, the lack of multidisciplinary care made it difficult for them to properly care for patients with chronic back pain.

*"It's a dilemma. The system and the lack of multidisciplinary approach are making it difficult to manage chronic back pain in our*

*practice. We are not giving proper care to the patients.” (P19, FGD 4)*

### **Subtheme 2: The disciplines that are involved in the care of patients with chronic low back pain**

The participants viewed that the multidisciplinary team should include disciplines such as orthopaedic, radiology, rehabilitation medicine, physiotherapy, and occupational therapy despite the constraints on personnel and finances in these specialities. Some also mentioned the involvement of social workers, policy makers and non-government organizations (NGOs) in retraining workers. The participants felt that having a multidisciplinary approach would allow patients with CLBP to be managed in a holistic manner.

*“We [primary care doctors] need other teams. Orthopaedics [speciality], occupational [therapy], rehabilitation unit, you know. All these [multidisciplinary team]. Together we can help the patients holistically.” (P5, FGD 1)*

Furthermore, the participants felt accessibility to commonly referred disciplines, such as physiotherapy, needs to be improved as waiting times can be a challenge to patients.

*“Commonly, we refer to physiotherapy. But appointments to the physiotherapist are not like before. Before this, you can walk in on the same day [that] you are referred. Nowadays, let’s say you go [to the physiotherapy unit] today with the [referral] form. It’s not going to be today. No way. They give an appointment after 2 to 3 weeks. This is difficult for the patient. Why do they need to wait that long?” (P13, FGD 3)*

When discussion centred on whether or not primary care doctors should be trained in these areas to cater to the needs of patients, they felt they should not.

*“There are occupational therapists and rehabilitation services. They are the ones who received the training. And they do their training in rehabilitation or occupational therapy, so they are the best people to be in the team. Maybe we can help in the initial treatment, initial clerking, initial diagnosis, and channelling them. I don’t think any specialist training in occupational therapy or rehabilitation will help us in any way. We are going to be a master of none.” (P23, FGD 4)*

### **Discussion:**

In this study, it was found that the doctors’ expectations in a consultation were predominantly doctor-centred as opposed to patients-centred, in opposition to current training in family medicine. This conforms to a study done in a similar setting whereby general practitioners were found to be less likely to be patient-centred as compared to other specialists.<sup>13</sup> A few studies have suggested that patient-centredness is related to satisfaction and use of health resources.<sup>14-16</sup> One study has observed that, if doctors fails to use a patient-centred and positive approach, patients will be less satisfied, less enabled, and may suffer greater symptom burdens.<sup>15</sup> Thus, in the care of patients with CLBP, patient-centredness and a positive approach can improve the care of patients by reducing symptoms burden, enhancing patients’ empowerment, and reducing the use of healthcare resources.<sup>15</sup>

Ideally, outcomes to be achieved in a consultation should be negotiated between the doctors and patients. This shared decision-making process can improve the patients and doctors’ satisfaction in a consultation. The literature related to doctors’ expectations in a consultation for back pain is scarce, and there is presently no valid tool with which to measure this.<sup>17</sup>

The doctors in this study tend to adhere to patients’ demands rather than the evidence-based practice recommended by the CPGs. This contributes to frustrations among doctors. Literature similarly reported that frustration and a sense of powerlessness dominated the consultations on CLBP.<sup>18,19</sup> Adherence to patients’ wishes, such as request for imaging by doctors, is mostly done to prevent unnecessary conflict. This may negatively impact the doctor-patient relationship.<sup>7,20</sup> However, one study suggested that doctors were overestimating the importance of sustaining the relationship with patients by abiding to their requests without any informed discussion and that doing this may diminish the decision-making powers and professional standings of doctors.<sup>21</sup>

Patients’ attitudes, such as being rude and threatening, were also found to cause frustrations among participants in this study. Similarly, the literature indicates that a substantial number of health care workers

experience some form of aggression from patients.<sup>22-23</sup> Careful assessment and logical management of an aggressive situation using a systematic risk assessment and well thought-through protocols can prevent serious harm to the patient, other patients, and members of staff.<sup>24</sup>

This study showed a spectrum of opinions regarding the local CPG. The unpopularity of the local CPG might be due to lack of promotion regarding its existence and a perception of its lack of usefulness in daily practice, such as containing recommendations which did not suit patients' preferences, and a lack of emphasis on the management of patients' expectations and discussion on the use of complementary and alternative medicines. These findings were similar to other studies which examined the lack of compliance in terms of the implementation of guidelines.<sup>25</sup> Other factors mentioned in the literature for ignoring CPGs included perception of the recommendations as not being cost-effective, lack of motivation, and lack of reimbursement for using the guidelines.<sup>25</sup> We need to bear in mind that the Malaysian guideline was constructed by experts mainly in the field of pain management.<sup>6</sup> Future guidelines that focus on holistic care of patients with CLBP should involve other stakeholders, i.e., family physicians, physiotherapists, and representatives from agencies such as the social security organization (SOCSSO).

There is a dire need for holistic treatments options, such as physiotherapy, occupational therapy, psychological services, rehabilitation medicine, and social workers, in the setting under study. Although the services were available in this setting, there is a lack of continuity of care, co-ordination, and communication between these specialties and the primary care unit, which leads to under-utilization of these services. However, funding and manpower may be an issue in an attempt to materialize this. It was viewed that unless back pain were part of the government's targets, it would not receive the attention and funding needed.<sup>26</sup>

The strength of this research is the study design and study participants. A qualitative study design allows the researcher to conduct an in-depth exploration of the questions under study. However, as the interviewer for this study is a novice researcher, construction

of the interview guide had more targeted questions rather than open questions with which to facilitate the interview. The study participants were the most appropriate key informants for the topic under study as all the participants had been and are managing patients with CLBP in their clinic. In Malaysia, previous studies conducted on low back pain were mainly quantitative. There is still a lack of research in this region regarding the topic under study. One of the limitations of this research was that this study only recruited primary care doctors in a single primary care setting. More perspectives regarding management issues may be generated if other primary care settings within the Ministry of Health and private general practitioners are included. The study also did not take into account patients' expectations, but merely perceived patients' expectations by their doctors. Future studies should include direct exploration of patients' expectations.

#### **Conclusion:**

This study highlights the management of CLBP, which is viewed as inadequate. Managing patients with CLBP is still a challenge among Malaysian primary care doctors. These challenges include a lack of even rudimentary interdisciplinary care among core healthcare members, i.e., primary care physicians and physiotherapists. Training on managing frustrations at work and the establishment of an effective multidisciplinary approach is fundamental in providing effective and holistic care to patients with. Future follow-up study can be done to look at the impact of an interdisciplinary and cost-effective approach involving all the core members of the healthcare system. This program should be innovative, structured and include patient education on self-management of their chronic problems.

#### **Acknowledgements:**

We would like to thank University of Malaya for the ethics approval and the funding of for this research. We greatly appreciated the participation of the primary care doctors in this study.

#### **Competing interests:** None

**Funding:** This study was funded by the University of Malaya's Post Graduate Research Fund. P0068-2014B

**How does this paper make a difference to general practice?**

- This study shows that primary care doctors' expectations in this study are mainly doctors-centred despite being in a training program that emphasise on patient-centredness and holistic patients' care.
- The study promotes awareness regarding frustrations at work faced by primary care trainees in managing patients with chronic conditions.
- The findings highlight that future strategies to improve the care of patients with chronic low back pain must include a multidisciplinary approach and improvement of the guideline recommendations to suit primary care practitioners.

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# Management of rhinosinusitis in adults in primary care

Husain S, Amilia HH, Rosli MN, Zahedi FD, Sachlin IS on behalf of Development Group Clinical Practice Guidelines Management of Rhinosinusitis in Adolescents & Adults

Husain S, Amilia HH, Rosli MN, et al on behalf of Development Group Clinical Practice Guidelines Management of Rhinosinusitis in Adolescents & Adults. Management of rhinosinusitis in adults in primary care. *Malays Fam Physician*. 2018;13(1);28–33.

## Keywords:

Sinusitis, rhinitis, diagnosis, treatment, referral

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## Abstract

Rhinosinusitis is a common health problem encountered in primary care. It is due to mucosal inflammation of the nose and paranasal sinuses. Less than 2% of the cases are associated with bacterial infections. Diagnosis is based on clinical symptoms and supported by nasal endoscopy and imaging studies. Intranasal corticosteroids and normal saline irrigation are important treatments. Antibiotics are seldom indicated.

## Introduction:

Sinusitis is a common health problem characterised by mucosal inflammation of the paranasal sinuses. However, it coexists with rhinitis in most patients. Hence, the current accepted terminology is rhinosinusitis (RS).

RS is divided into two subtypes: acute (ARS) and chronic (CRS), based on the duration of the symptoms. The prevalence rates of ARS and CRS range from 6% to 15% and 5% to 15%, respectively, in Western populations. Meanwhile, studies from several Asian countries show lower prevalence rates of CRS ranging between 2.7% and 8%.

RS poses a major health problem. The disease and its effect on quality of life, productivity and finances are substantial. As the majority of patients with RS present in a primary care setting, it is important for primary healthcare providers to be aware of the diagnosis and management of the disease.

## Diagnosis

The diagnosis of RS is usually based on clinical symptoms supported by diagnostic imaging or nasal endoscopy as shown below.

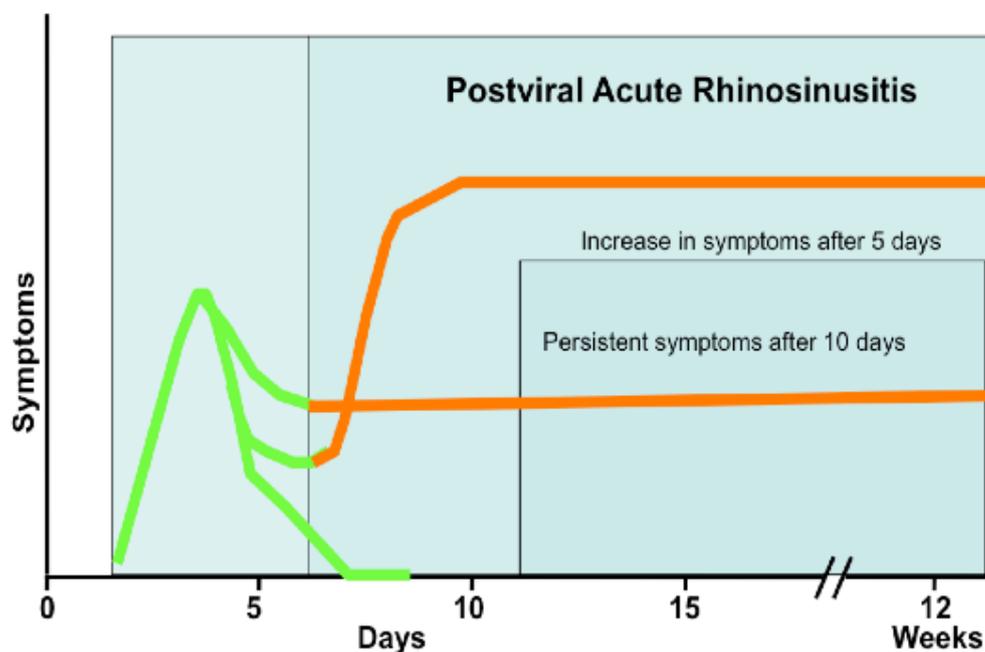
- The clinical definition of RS in adults is:
  - Inflammation of the nose and paranasal sinuses characterised by two or more symptoms, one of which should be either nasal blockage/obstruction/congestion or nasal discharge (anterior/posterior nasal drip):
    - ± facial pain/pressure
    - ± reduction in or loss of smell
- AND at least one of the following:
  - Endoscopic signs of:
    - nasal polyps and/or
    - mucopurulent discharge, primarily from middle meatus and/or
    - oedema/mucosal obstruction, primarily in middle meatus
  - CT changes:
    - mucosal changes within the ostiomeatal complex and/or sinuses
  - Past medical history of CRS (medically diagnosed)

## Classification

- Acute versus chronic  
ARS is defined as a worsening of symptoms after five days or symptoms

persisting after 10 days, but less than 12 weeks. If the duration of symptoms is less than five days, the diagnosis is acute viral RS, commonly known as the common cold (refer to **Figure 1**).

CRS is defined as symptoms persisting for more than 12 weeks.



**Figure 1.** Definition of ARS

- Viral versus bacterial  
The majority of ARS cases are viral in origin, with only 0.5 - 2.0% complicated by bacterial infection. In clinical practice, it is difficult to differentiate between bacterial and viral RS. This may lead to unnecessary antibiotic use for patients and increase the incidence of antibiotic resistance. Symptoms such as fever, facial pain, purulent nasal discharge and duration of symptoms have been used to differentiate bacterial from viral RS, as shown below.

- Acute bacterial rhinosinusitis (ABRS) is suggested when there are at least three symptoms/signs of:
  - discoloured discharge (with unilateral predominance) and purulent secretion in the nasal cavity
  - severe local pain (with unilateral predominance)
  - fever ( $>38^{\circ}\text{C}$ )
  - elevated erythrocyte sedimentation rate/C-reactive protein
  - deterioration of symptoms and signs

#### Risk factors

Risk factors for ARS are:

- active smoker
- allergic rhinitis (AR)

For CRS, the risk factors are:

- smoker (a second-hand smoker has a higher risk of CRS with current and past exposure)
- positive family history
- asthma, especially in the presence of CRS with nasal polyps (CRSwNP)
- allergies, chronic bronchitis and emphysema
- ARS

- chronic rhinitis
- gastroesophageal reflux disease
- sleep apnoea
- adenotonsillitis

There is no evidence for a causal correlation between sinonasal anatomical variations, in general, and the incidence of CRS.

#### Physical examination

- ARS  
An anterior rhinoscopy should be performed

as part of the clinical assessment of suspected ARS in a primary care setting. It may reveal findings such as mucosal oedema, nasal inflammation, purulent nasal discharge, polyps and/or anatomical abnormalities.

- **CRS**  
Anterior rhinoscopy has a limited value in diagnosing CRS. Diagnosis of CRS requires a nasal endoscopy by an otorhinolaryngology (ORL) surgeon, which provides better visualisation of nasal pathologies, including anatomical variations, mucosal inflammation, polyps and nasal discharge.

#### Investigations

- **Laboratory**  
A nasal swab should not be performed in the case of RS in the primary care setting due to its low predictive value in diagnosing ABRS and CRS.

An endoscopically-directed middle meatal culture by otorhinolaryngologists can obtain a specimen for culture and susceptibility tests in unresolved ABRS (no response to antibiotics after 72 hours).

The organisms most commonly associated with ABRS are:

- *Streptococcus pneumoniae*
- *Haemophilus influenzae*
- *Moraxella catarrhalis* (more commonly in children)

Anaerobic organisms are predominant in ARS with dental origin.

In CRS, the most commonly involved organisms are:

- *Staphylococcus aureus*
- *Enterobacteriaceae spp*
- *Pseudomonas spp*

- **Radiology**  
Plain radiography is not recommended in the management of RS.

A computed tomography (CT) scan is the gold standard for radiographic evaluation of the paranasal sinuses. A CT scan of the paranasal sinuses should be considered in the ORL setting when:

- medical therapy fails
- surgery is planned
- complications are suspected

#### Treatment

- **ARS**
  - *Nasal irrigation*  
Nasal irrigation is recommended in ARS. Buffered or normal saline irrigation facilitates mechanical removal of mucus, infective agents and inflammatory mediators. It also decreases crusting in the nasal cavity and increases mucociliary clearance.
  - *Corticosteroids*  
Intranasal corticosteroids should be considered for 14 - 21 days in ARS. Oral corticosteroids **should not** be prescribed to treat ARS in the primary care setting.
  - *Oral antihistamine*  
An antihistamine may have a role in the treatment of ARS with underlying AR. Symptoms suggestive of the condition include sneezing, nasal itchiness, nasal obstruction and rhinorrhoea. Antihistamine controls sinusitis symptoms in AR. Evidence shows that there is improvement in sneezing after 14 days and nasal obstruction after 28 days of treatment.
  - *Antibiotics*  
Antibiotics may be prescribed for ABRS after weighing benefits against potential side effects. Gastrointestinal upsets are the most common side effects. Antibiotics overuse has resulted directly in an increased prevalence of antimicrobial resistance.  
  
In suspected ABRS, the preferred antibiotics are:
    - Amoxicillin 500 mg every 8 hours for 5 - 7 days OR
    - Amoxicillin/Clavulanate 625 mg every 8 hours for 5 - 7 days
  - *Other medications*
    - Analgesics: paracetamol or non-steroidal anti-inflammatory drugs may provide symptomatic relief in both viral and bacterial infections of the upper respiratory passages in RS.
    - Decongestants: Topical or systemic decongestants may offer additional symptomatic relief. Topical

decongestants **should not be** prescribed for more than two weeks due to the rebound phenomenon. Oral decongestants **should be** cautiously prescribed in those with medical conditions such as insomnia, glaucoma, benign prostate hyperplasia, diabetes mellitus and cardiovascular diseases.

- Mucolytics and antiviral agents: There is no evidence to support the use of these agents in RS.

- CRS

- Intranasal corticosteroids should be given for 16 - 52 weeks in CRS. Short-term oral corticosteroids (25 mg/day for 2 weeks) **should only** be given in CRS at an ORL centre.
- Nasal irrigation is also a useful adjunct medication in CRS.
- Antihistamine: there is insufficient evidence to recommend its use for treatment of CRS in non-AR patients.
- Antibiotics should not be used routinely in CRS.

- Surgery

Surgery should be considered in ARS with orbital or intracranial complications. Functional endoscopic sinus surgery should be offered to patients with CRS who fail optimal medical treatment.

### Referral

- ARS

Early referral (within one week) criteria are:

- persistent symptoms despite optimal therapy, in particular

- immunocompromised patients such as those with uncontrolled diabetes, end-stage renal failure or a human immunodeficiency virus (HIV) infection
- frequent recurrence ( $\geq 4$  episodes per year)
- anatomical defects causing obstruction
- suspected malignancy

Urgent referral (within 24 hours) criteria are:

- orbital complications
  - periorbital oedema/erythema
  - displaced globe
  - double vision
  - ophthalmoplegia/restricted eye movement
  - reduced visual acuity
- severe frontal/retro-orbital headache
- forehead swelling (subperiosteal abscess)
- neurological manifestations, such as meningitis, altered consciousness or seizure
- septicæmia

- CRS

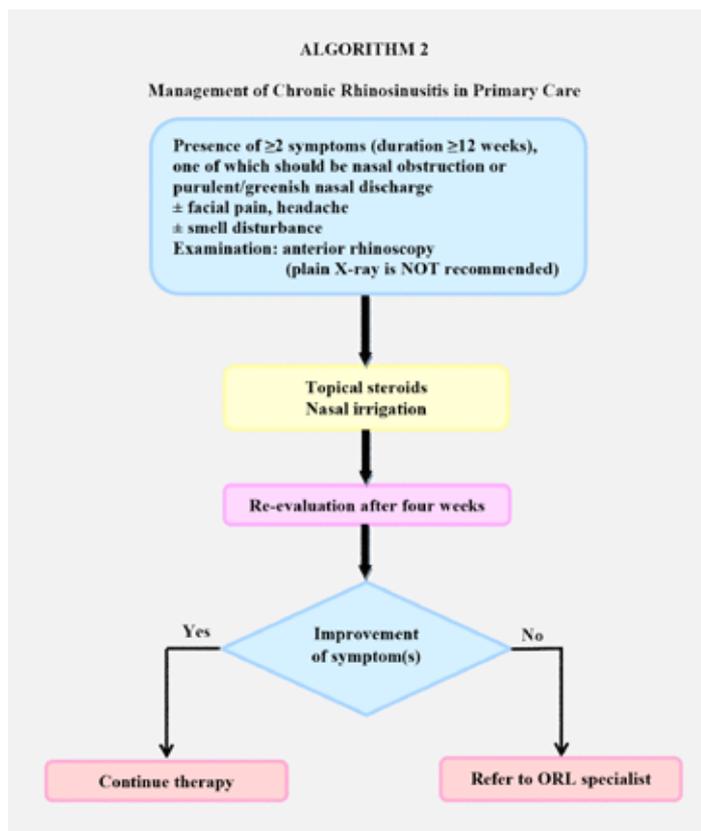
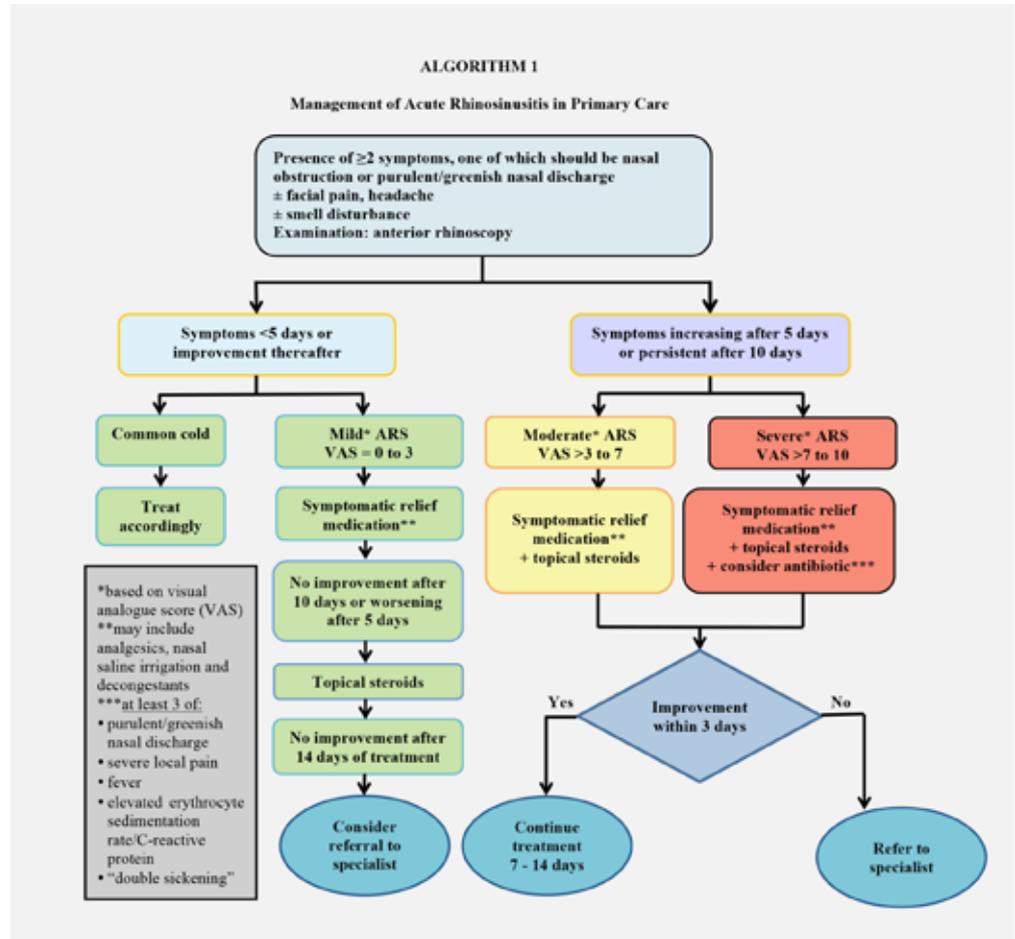
Early referral (within one week) criteria are:

- failed course of optimal medical therapy
- $>3$  sinus infections/year
- suspected fungal infections, granulomatous disease or malignancy

Urgent referral (within 24 hours) criteria are:

- severe pain or swelling of the sinus areas, in particular in immunocompromised patients, such as those with uncontrolled diabetes, end-stage renal failure or an HIV infection

Summaries of the Management of ARS & CRS in Primary Care are shown in **Algorithms 1 and 2.**



**Acknowledgement**

Details of the evidence supporting the above statements can be found in Clinical Practice Guidelines on the Management of Rhinosinusitis in Adolescents & Adults 2016, available on the following websites: <http://www.moh.gov.my> (Ministry of Health Malaysia) and <http://www.acadmed.org.my> (Academy of Medicine). Corresponding organisation: CPG Secretariat, Health Technology Assessment Section, Medical Development Division, Ministry of Health Malaysia; contactable at [htamalaysia@moh.gov.my](mailto:htamalaysia@moh.gov.my).

## A food bolus obstructing the oesophagus in a patient with infantile cerebral palsy

Vong KS, Mohamad I, Salim R

Vong KS, Mohamad I, Salim R. A food bolus obstructing the oesophagus in a patient with infantile cerebral palsy. *Malays Fam Physician*. 2018;13(1);34–36.

### Keywords:

Foreign body, ingestion, hyper-salivation, food, oesophagoscopy

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### Abstract

**Introduction:** A foreign body (FB) in the upper aerodigestive tract is a fairly common encounter. Fish bones are the commonest FB seen in adults. The commonest presentation is odynophagia. Usually, the patient will point at the level of FB on the neck to indicate the location.

**Methods:** Clinical report.

**Results:** This case report describes a large FB in an adult with underlying infantile cerebral palsy. Besides dysphagia, it was associated with drooling of saliva and pain in the throat region.

**Conclusion:** FB ingestion with complete obstruction of the oesophagus is an emergency. It may cause total dysphagia as the passage of food is completely blocked.

### Introduction

The most frequent location of an impacted foreign body (FB) in the oesophagus is at the upper third of the oesophagus, which constitutes 85.2%.<sup>1</sup> It is due to the presence of the first narrowing of the structure, which is the cricopharyngeus or the upper oesophageal sphincter. The most common FB in adults is fish bone while coins are more likely amongst children. Generally, the nature of FB can be divided into organic and inorganic.<sup>2-4</sup> Accidental swallowing of a FB causing obstruction in the aerodigestive tract is common in children between 6 months and 3 years of age, possibly due to an uncoordinated swallowing reflex and lack of proper chewing due to the absence of molars. However, it is not uncommon in adults, especially those with an underlying neurological disorder such as cerebral palsy.

### Case summary

A 31-year-old gentleman who had a history of infantile cerebral palsy and right spastic hemiplegia complained of anterior neck pain, dysphagia, odynophagia associated with hypersalivation and occasional cough. There was no history of dysphagia prior to this episode. Six hours prior to the presentation, he was admitted with a food bolus stuck in the throat that occurred during a meal. He had failed in multiple attempts to forcibly vomit out the food debris. His vital signs at the emergency department of our hospital were stable. His oropharynx and lungs were

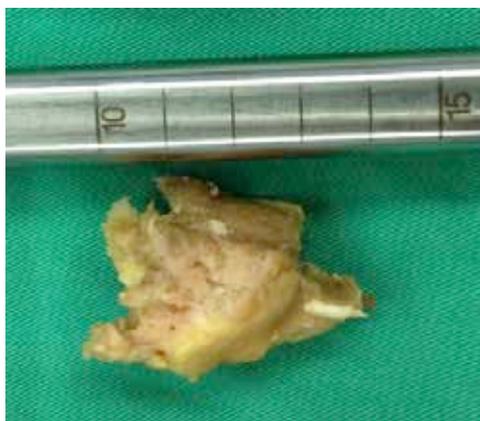
clear, and he had no abdominal tenderness. A lateral neck radiograph revealed air trapping with widened prevertebral soft tissue at the level of C7 (**Figure 1**). Chest radiograph had no significant findings. Bedside flexible nasopharyngolaryngoscopy revealed pooling of saliva at the pyriform fossa but no FB or any other abnormality was seen.



**Figure 1.** A radiograph of lateral neck showing air trapping with widened prevertebral soft tissue at the level of C7

He was taken immediately for direct laryngoscopy but a FB was not detected. Rigid oesophagoscopy was performed and revealed a huge food bolus that mainly consisted of cartilage and meat was found 18 cm from the upper incisor and en bloc

removal was done (**Figure 2**). A repeat examination down to 25 cm distal from the upper incisors revealed a mild abrasion with oedematous mucosa at 19 cm from the upper incisor but no perforation seen. After the procedure, the patient was kept nil by mouth with Ryle's tube inserted. A chest radiograph after the procedure revealed no signs of oesophageal perforation or mediastinitis. Symptoms and signs of oesophageal perforation such as fever, chest pain, interscapular pain and tachycardia were not present postoesophagoscopy. He was allowed orally and the Ryle's tube was removed after the absence of any evidence suggestive of perforation. Subsequent recovery was uneventful.



**Figure 2.** The food bolus removed measured 4 cm in its greatest dimension

### Discussion

Our patient has a higher risk of FB ingestion compared to adults without disabilities due to his underlying neurological disorder. The acute onset of a high level oesophageal obstruction made it necessary for him to seek immediate medical treatment. Early medical treatment can prevent complications, such as pressure necrosis or perforation, which can result in life-threatening sepsis.<sup>5,6</sup> The risk of perforation depends on the nature of the FB such as its shape, consistency, size and orientation.<sup>7</sup>

The caregivers of mentally challenged patients should have a high level of suspicion of FB ingestion, particularly in those who cannot give a proper history and those with a prior history of pica (eating disorder where non-food materials are ingested).<sup>8</sup> In this case, the patient was able to tell the history himself combined with the history from his relatives. The patient was taking the meal by himself as usual.

Objects may get lodged in the tonsil, base of tongue, vallecula, pyriform fossa and oesophagus or sometimes in the upper or lower respiratory tract leading to medical or surgical emergencies, which are often challenging. Food bolus impaction in the alimentary tract can be differentiated from choking and aspiration. Choking and aspiration indicate that the FB had entered the airway. It is usually manifested as an episode of coughing or shortness of breath. When food is impacted in the oesophagus, the symptom is mainly dysphagia, which is relieved only after removal of the food bolus.

Complications of FB ingestion lodged in the upper oesophagus can be divided into immediate or delayed. Immediate complications such as mucosal abrasions, perforation and bleeding or haematoma formation should be anticipated. Typical perforation signs and symptoms are fever, chest pain, interscapular pain and/or tachycardia, which require a prompt response - usually, the outcomes are good. Chronic complications such as oesophageal stricture or fistula formation may need referral to other health care disciplines for further management.

When evidence of complete oesophageal obstruction is present, emergency removal of oesophageal food bolus impactions should be performed.<sup>9</sup> The diagnosis can be established based on history, clinical and radiological examination.<sup>2,10</sup> If this case is detected in primary care, we strongly recommend for urgent referral to the otorhinolaryngology department at the tertiary hospital for further prompt management. The best way to remove this FB is early rigid oesophagoscopy performed by skilled personnel.

### Conclusion

FB ingestion in patients with underlying neurological disorder presenting with complete oesophageal obstruction should be diagnosed early with the help of history, clinical examination and imaging. The immediate removal of the impaction by a skilled surgeon is the best management.

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## Lemierre's syndrome: A persistent unusual neck pain and swelling

Vincent Ngu CY, Rohaizam J, Jong YH

Vincent Ngu CY, Rohaizam J, Jong YH. Lemierre's syndrome: A persistent unusual neck pain and swelling. *Malays Fam Physician*. 2018;13(1):37–40.

### Keywords:

Lemierre's syndrome, Internal jugular vein thrombosis, *Fusobacterium* species.

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### Abstract

Lemierre's syndrome is a systemic complication commonly caused by oropharyngeal infection by *Fusobacterium* species, which manifests itself as an internal jugular vein thrombosis formation. It is a rare occurrence nowadays with the availability of broad spectrum antibiotics for treatment. Most cases in the literature presented with a life-threatening condition. We are reporting a case of Lemierre's syndrome that presented with persistent neck pain and swelling, initially diagnosed as cervical lymphadenitis.

### Introduction

Lemierre's syndrome is a life-threatening condition, first reported by Courment and Cade in 1890, and later described by Andre Lemierre in 1936.<sup>1</sup> It is a condition that affects mostly young, otherwise-healthy immunocompetent adults and is characterized by a sequence of symptoms commonly following a recent history of oropharyngeal infection.<sup>2</sup> The patient typically presents with an acute oropharyngeal infection subsequently complicated by thrombophlebitis of the internal jugular vein and distant septic thromboemboli, which can eventually lead to multi-organ failure.<sup>2</sup> The incidence of Lemierre's syndrome decreased to a great extent with the introduction of antibiotics in the 1940s.<sup>1,7,9</sup> We are reporting a case of a patient with a provisional diagnosis of cervical lymphadenitis whose ultimate diagnosis was Lemierre's syndrome.

### Case Report

A 15-year-old boy presented to our centre with a one-week history of right-sided neck pain associated with odynophagia, dysphagia, and intermittent fever. This was preceded by a sore throat and fever, which was treated as acute tonsillitis two weeks prior to this presentation. Examination revealed tenderness over the right side of the neck with palpable swelling over the right levels III and IV cervical regions, which was firm in consistency with an ill-defined margin (**Figure 1**). The ear, nose, and throat examination showed bilateral non-erythematous grade II tonsils. Blood investigations showed leukocytosis (27600/uL) and a raised erythrocyte sedimentation rate of 92mm/hr. The renal, liver, and coagulation profiles were normal.

He was admitted and treatment was started with intravenous amoxicillin-clavulanic acid. However, the patient remained feverish in the ward. In view of the lack of improvement in the patient's condition despite intravenous antibiotics, further investigation with ultrasound and computed tomography (CT) scan of the neck was carried out. These revealed an extensive right internal jugular thrombosis, beginning at the level of the thyroid isthmus and extending inferiorly to the retrosternal region (**Figures 2 and 3**). Blood culture and sensitivity (C&S) grew *Fusobacterium necrophorum*. Collectively, these findings confirmed the diagnosis of Lemierre's syndrome.

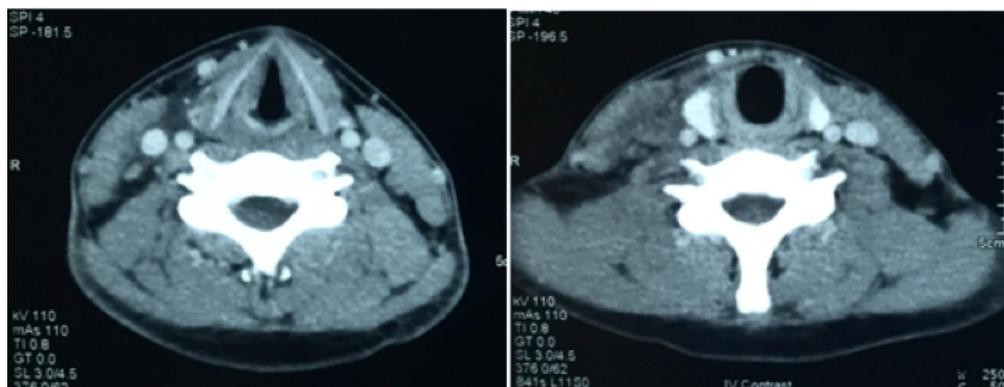
He was continued on intravenous amoxicillin-clavulanic acid with the addition of metronidazole for a total duration of 2 weeks, as well as anticoagulant therapy.



**Figure 1.** Lateral and anterior view of the neck shows fullness of the right neck region.



**Figure 2.** Ultrasonography of neck shows a right internal jugular thrombus



**Figure 3.** Contrast-enhanced computed tomography of neck shows a filling defect in the right internal jugular vein at the root of neck.

**Discussion**

Lemierre’s syndrome is a systemic complication of an oropharyngeal infection which manifests itself as an internal jugular vein thrombosis formation. Even though the majority of the cases of Lemierre’s syndrome originate from an oropharyngeal infection, it can also begin in the gastrointestinal, genitourinary, and lower respiratory tracts.<sup>4,5</sup> Without proper diagnosis and prompt treatment, Lemierre’s syndrome can have an aggressive course.<sup>6</sup> It carries a mortality rate of 5 – 18%.<sup>6</sup> The common presentations of this syndrome are sore throat, fever with chills and rigors, cervical lymphadenopathy, neck pain, and swelling.<sup>7</sup> Septic embolism to the lungs is extremely common (>80%). Septic arthritis (13-27%), osteomyelitis (0-9%), skin and soft tissue lesions (0-16%), and abnormal liver function with jaundice (11-49%) are possible complications.<sup>4</sup> In up to 18% of cases, the patient might develop a potentially fatal complication, such as septic shock.<sup>7</sup> Rarely will a patient present with central nervous system manifestations (<3%). Cavernous sinus septic

thrombosis complication have been reported; these may be due to retrograde propagation from the internal jugular thrombosis.<sup>5</sup>

To date, the pathogenesis of Lemierre’s syndrome has yet to be elucidated.<sup>6,8</sup> However, several theories have been proposed. First of all, it is possible that the causative microorganism invades into the lateral pharyngeal wall from the oropharynx via lymphatic drainage.<sup>8</sup> This would then cause perivenous inflammation, subsequently leading to luminal thrombosis.<sup>8</sup> Another possible mechanism that might play a role in the occurrence of Lemierre’s syndrome is that the bacteria penetrates through the pharyngeal mucosa, which has had its structure

altered by the preceding viral or bacterial pharyngitis.<sup>10</sup>

Before antibiotics were introduced in the 1940s, Lemierre’s syndrome carried a mortality rate of approximately 90%.<sup>11</sup> With the widespread use of antibiotics in the treatment of pharyngitis, the incidence of Lemierre’s syndrome decreased drastically. Nonetheless, since the 1990s, the number of cases of Lemierre’s syndrome has been documented to be on the rise worldwide.<sup>9</sup> A few recent reports postulated that this phenomenon could be attributed to the more judicious use of antibiotics in the treatment of pharyngitis, as advised by most clinical guidelines.<sup>9,10,11</sup> However, more studies are warranted to investigate whether or not the rising cases of Lemierre’s syndrome in these past decades were related to less use of antibiotics in pharyngitis. Nevertheless, there is still no recommendation as to the exact duration and types of antibiotics to be used in the treatment of bacterial pharyngitis to prevent progression into Lemierre’s syndrome.

In our case, the patient had been treated for acute tonsillitis in primary care and prescribed oral antibiotics. A clinically-well patient with only mild neck pain was consistent with the diagnosis of cervical lymphadenitis, a common

reason for a palpable neck swelling. Without the use of ultrasound and the CT scan of the neck, we would have missed the internal jugular vein thrombosis in our patient. Therefore, in young adults with a unilateral neck swelling that failed treatment for pharyngitis, close monitoring should be the rule.<sup>10,11</sup>

While the causative pathogen in the majority of the Lemierre's syndrome cases is *Fusobacterium necrophorum*, *Peptostreptococcus*, Group B and C *Streptococcus*, *Staphylococcus*, *Enterococcus* species, and *Proteus* have also been reported to be etiological agents.<sup>3</sup>

*Fusobacterium necrophorum* is still sensitive to the penicillin group, which makes it the drug of choice in treatment.<sup>10,12</sup> Other antibiotics, such as cephalosporin, metronidazole or clindamycin, can still be used as first-line treatments for Lemierre's syndrome.<sup>11</sup> A 3–6 weeks course of intravenous antibiotic therapy is advocated and given until the patient is afebrile, and anticoagulation may be necessary to prevent propagation of the internal jugular

vein thrombosis towards the cavernous sinus.<sup>11</sup> Ligation and excision of the internal jugular vein is only reserved for intraluminal collection.<sup>3</sup>

In our case, treatment began with amoxicillin-clavulanic acid, and metronidazole was then added after the diagnosis of Lemierre's syndrome was confirmed. Both agents were given for a total duration of two weeks. In addition, anticoagulant therapy was started for the treatment of the internal jugular vein thrombosis.

### Conclusion

Patients' presentation of neck swelling and fever may not only be consistent with diagnoses of cervical lymphadenitis, tumour, or neck abscess. Lemierre's syndrome should be entertained as a differential if the appropriate constellation of symptoms occurs after a history of bacterial pharyngitis. The diagnosis of Lemierre's syndrome is clinched with radiographical evidence of an internal jugular vein thrombosis and positive culture, mainly of *Fusobacterium* species.

### Take-home message:

1. Lemierre's syndrome is a rare, but serious, complication which may occur after an oropharyngeal infection.
2. Penicillin is still the drug of choice for Lemierre's syndrome.
3. Persistent neck swelling and tenderness with high grade fever, following an oropharyngeal infection, should heighten one's suspicion of Lemierre's syndrome, and early referral for further investigation is the rule.

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## Bilateral peritonsillar abscess: A rare emergency

Boon C, Wan Mohamad WE, Mohamad I

Boon C, Wan Mohamad WE, Mohamad I. Bilateral peritonsillar abscess: A rare emergency. *Malays Fam Physician*. 2018;13(1):41–44.

### Keywords:

Peritonsillar abscess, tonsillitis

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### Abstract

Peritonsillar abscess, or quinsy, is a rare complication of acute tonsillitis. It usually presents with odynophagia, trismus, and muffled voice, reflecting the space-occupying lesion in the oral cavity. Examination reveals a unilateral swelling on either side of the soft palate, which drains thick pus after an incision is made. It is regarded as an emergency as an upper airway obstruction can develop. Bilateral peritonsillar abscess is a rare presentation and results in catastrophic sequelae. We present a case of bilateral peritonsillar abscess that was initially referred by a primary care centre facing a dilemma in diagnosis. Prompt diagnosis and fast drainage are warranted to avoid unwanted morbidity, and, also, mortality.

### Introduction:

Peritonsillar abscess is one of the most common deep neck space infections. Tonsillitis, peritonsillar cellulitis, and peritonsillar abscess represent the spectrum of disease progression from the mildest to most severe form. Unilateral peritonsillar abscess is relatively common, but bilateral involvement is rare.<sup>1-3</sup> The incidence of peritonsillar abscess in the United States and Puerto Rico among patients 5 to 59 years of age was reported to be 30.1 per 100,000 person years.<sup>4</sup> The actual frequency of bilateral peritonsillar abscess is unknown; however, the rate has been reported to vary from 1.9% to 24% in cases of quinsy tonsillectomy.<sup>1</sup>

### Case Summary

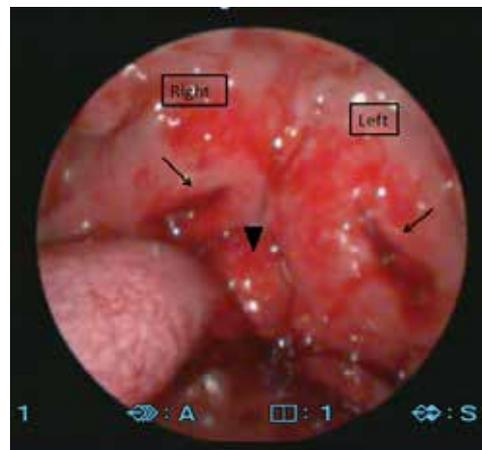
A 25-year-old, previously healthy man presented with a sore throat that he had had for a duration of five days. He also had an intermittent high-grade fever with chills and rigors. He had voice changes, odynophagia, and dysphagia for three days. He also started to develop difficulty breathing when lying in a supine position on the day of his presentation. There was no history of foreign body ingestion. Otherwise, he had no neck swelling or limited neck movement. It was also noted that he was an active smoker with a seven pack-year history. Examination documented his temperature as 38°C along with other normal parameters. His hydration status was fair.

He had a muffled voice but no stridor. He also had a limited ability to open his mouth due to trismus. The bilateral peritonsillar areas were bulging with overlying congested mucosa. The

uvula was centrally located (**Figure 1**). There was no swelling over the posterior pharyngeal wall.



**Figure 1:** Bilateral peritonsillar areas were bulging with centrally located uvula (arrowhead) and pus discharge over left peritonsillar area (arrow).



**Figure 2:** Incision (arrow) and drainage were done over the bilateral peritonsillar area. Uvula (arrowhead) was centrally located.

The provisional diagnosis of bilateral peritonsillar abscess was made. Aspiration of the bilateral peritonsillar area at the most bulged sites revealed purulent material that confirmed the diagnosis. Incision and drainage of the bilateral peritonsillar abscess was performed (**Figure 2**).

The right side drained 10cc of pus, and 20cc of pus was evacuated from the left peritonsillar area. The patient was started on intravenous amoxicillin/clavulanic acid, and he responded well. He was discharged after three days of parenteral antibiotics. Oral antibiotics were continued for one week at home. Reassessment after one week showed that the patient had made a full recovery.

### Discussion

Peritonsillar abscess, also known as quinsy, is a common complication of tonsillitis. It is one of the most common deep space infections of the head and neck. This condition can occur in all age groups, but the highest incidence is observed in adults aged 20 to 40 years old.<sup>5</sup> Sowerby et al. reported an incidence of 12.4 per 100,000 people in London 2009.<sup>6</sup> Peritonsillar abscess is one of the stages of disease progression that begins with tonsillitis and peritonsillar cellulitis. Peritonsillar abscess begins with suppuration over the space between the tonsillar capsule and superior pharyngeal constrictor muscle. Unilateral peritonsillar space involvement is almost pathognomonic of the disease.

In contrast, bilateral peritonsillar abscess is a rare event. Few cases have been reported. Kessler et al. reported an incidence rate of 4.9% in his series.<sup>7</sup> The rates vary from 1.9% to 24% in reports describing abscess tonsillectomy in which unsuspected contralateral abscess was discovered intraoperatively.<sup>2</sup> The low incidence of bilateral peritonsillar abscess could be due to early diagnosis and treatment before progression to the contralateral site, treatment with antibiotics, or underreporting.

The diagnosis of peritonsillar abscess is usually made by clinical observation. Besides muffled voice, odynophagia, fever, and trismus, unilateral peritonsillar abscess shows classical presentations of a deviated uvula and unilateral peritonsillar bulging. In bilateral peritonsillar abscess, lack of these typical clinical features can create a dilemma for less experienced medical personnel during the differential diagnosis.

The diagnosis should be considered in a very ill patient with similar symptoms and clinical findings of a centrally pushed forward uvula with bilateral peritonsillar swelling.<sup>3</sup> Intraoral ultrasonography can be used to confirm the diagnosis.<sup>8</sup> In addition, contrast-enhanced CT is also helpful in confirming a diagnosis of bilateral peritonsillar abscess. A CT scan can help differentiate peritonsillar abscess from other diseases, such as lymphoma or severe acute tonsillitis, and also rule out complications that include extension of the abscess into deep neck spaces.<sup>2</sup> Additionally, a CT scan is generally used to guide the drainage in an atypical presentation, such as in an inferior pole abscess or in cases where there is high risk of complication during the drainage procedure, such as in patients with bleeding disorders. Grant et al. reported in a retrospective case-control study that the use of a CT scan is not associated with a difference in intervention in children with peritonsillar abscesses, but it is associated with a significant delay in treatment (time to otolaryngology consultation, time to admission, and time to bedside procedure).<sup>9</sup> In the present case, based on the clinical features, aspiration over the bilateral peritonsillar area was performed and revealed the presence of pus, which confirmed the diagnosis. Without further imaging or delay, the patient went on to have a bedside incision and drainage of the peritonsillar abscess.

Treatment of a peritonsillar abscess remains controversial. It mainly consists of intravenous antibiotics with drainage of the abscess using needle aspiration, incision and drainage, or abscess tonsillectomy. There is no agreement on the optimal technique for the initial drainage of a peritonsillar abscess.<sup>4,10</sup> Needle aspiration may potentially be less painful, cheaper, and technically easier to perform. Incision and drainage results in more efficient drainage of the abscess due to dissection of the tissue barriers that separate the abscess cavity into micro-loculations. However, it is a more invasive method that carries a higher risk of injury to underlying structures and may also cause aspiration of purulent material. A comparative study by Khan et al. involving 56 subjects concluded that incision and drainage for peritonsillar abscess was superior to needle aspiration in terms of hospital stay and abscess recurrence, whereas needle aspiration was superior in terms of post-operative pain.<sup>11</sup> A national audit of the management of peritonsillar abscess by Mehanna et al. stated that all cases of peritonsillar abscess should be

started on antibiotics, but that the drainage method varies depending on differences in training or surgeon preference.<sup>12</sup> Both needle aspiration and incision followed by drainage are highly curative. Resistance to existing treatments may prompt clinicians to proceed to more invasive treatments, such as abscess tonsillectomy.

In our case, needle aspiration was used for diagnostic purposes, while definitive treatment was carried out by incision and drainage with concurrent administration of intravenous antibiotics. Both procedures were done under local anaesthesia as an office procedure. Needle aspiration uses large-bore needles inserted through the palatoglossus muscles into the abscess. Several insertions of the needle in different locations may be performed during a single treatment episode. The incision and drainage method uses a guarded scalpel to incise the palatoglossus muscle and enter the peritonsillar space/abscess. The peritonsillar space is then opened widely by dissection with blunt forceps to promote drainage of the abscess. Mehanna et al. stated that almost all peritonsillar abscess patients (up to 94%) are managed as in-patients and that most patients require two-day admissions.<sup>12</sup> Lin and Lee recommend the use of the same needle aspiration technique used in unilateral peritonsillar abscess treatment for treating bilateral disease; however, a period of close observation is vital after the procedure since the risk of complication in bilateral disease is higher.<sup>2</sup> Repeated aspiration, incision and drainage, or a tonsillectomy can be performed if there is no improvement after the first attempt at aspiration. Quinsy tonsillectomy is also indicated for those cases with a compromised airway.<sup>2</sup>

Bilateral peritonsillar abscess carries a greater risk of causing airway obstruction compared to unilateral abscess since the space occupied by the abscess is larger in the bilateral case. In addition, the risk of suppuration extending to deeper neck compartments is increased. It is believed that bilateral peritonsillar abscess carries an increased risk of complication compared to unilateral abscess given its late presentation, as well as the more extensive involvement of the pharyngeal area. Rapid diagnosis, followed by adequate treatment is of utmost importance in preventing respiratory obstruction and its complications. Perforation of the abscess into the parapharyngeal space can lead to the spread of infection along the neck

vessels to the mediastinum and skull base.<sup>2</sup>

Tobacco smoking is a known risk factor for peritonsillar abscess. A study by Klug TE showed that smokers had an approximately 150% increased risk of peritonsillar abscess compared to non-smokers.<sup>13</sup> Sixteen percent of peritonsillar abscess cases could potentially be avoided if everyone ceased smoking.<sup>13</sup> Male predominance is reported in 42 of 48 studies of peritonsillar abscess.<sup>13</sup> This can perhaps be explained by the higher smoking frequency in men compared to women. History of recurrent tonsillitis is also believed to be one of the risk factors for peritonsillar abscess. Ten to seventy-nine percent of peritonsillar abscess patients were reported to have a history of tonsillar disease. However, there is no solid statistical evidence for an association between peritonsillar abscess and recurrent tonsillitis as previous studies lacked the appropriate definition of recurrent tonsillitis or no definition of recurrent tonsillitis was given by some of the authors.<sup>13</sup>

As peritonsillar abscess is at the end of the spectrum of disease that starts with acute tonsillitis, early initiation of antibiotics can prevent deterioration of the disease and progression into abscess formation.<sup>14</sup> Tonsillectomy is also performed in cases of recurrent tonsillitis or recurrent peritonsillar abscess to prevent future episodes. General practice plays a major role in referring cases of recurrent tonsillitis to otolaryngologists for tonsillectomy, which can reduce the incidence of peritonsillar abscess. Quitting smoking is also believed to reduce the incidence of peritonsillar abscess since there is a strong association between tobacco use and peritonsillar abscess formation.<sup>13</sup>

### Conclusion

Awareness of this rare presentation of peritonsillar abscess can prevent the delay of the precise final diagnosis and treatment, which is of utmost importance in avoiding life-threatening complications. Radiological imaging can help in the diagnosis if clinical features are ambiguous.

### Conflict of Interest

All authors had no conflict of interest in this study.

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## Glomus tympanicum

Appannan VR, Md Daud MK

Appannan VR, Md Daud MK. Glomus tympanicum. *Malays Fam Physician*. 2018;13(1):45–48.

### Keywords:

Parangliomas, Glomus tympanicum, pulsatile tinnitus, Conductive hearing loss, Case report.

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### Abstract

Glomus tympanicum is a tumour classified under the group glomus tumours, and is also known as paragangliomas. It is thought to commonly occur in women in the fifth to sixth decades of life. Here, we report a case of a 77-year-old lady with multiple co-morbidities and a diagnosis of glomus tympanicum presenting to us. Her symptoms included pulsatile tinnitus, and reduced hearing, and the management of the case was done with consideration for her underlying multiple co-morbidities. This paper also describes the best modality of treatment for this patient with regard to her background history. The treatment goal was to improve her quality of life and control the disease.

### Introduction:

Glomus tympanicum is a type of tumour, which is classified under the large group of glomus tumours. Glomus tumours are also known as paragangliomas, which may occur at any site in the body, including the carotid bodies. Glomus tympanicum is a paraganglioma of the middle ear which is highly vascular and a type of benign tumour. It arises from the paraganglia of the middle ear. It is the most common primary neoplasm of the middle ear, and the second most common tumour of the temporal bone.<sup>1</sup>

The common presentations of this tumour are pulsatile tinnitus, due to its highly vascular nature, and conductive hearing loss due to the presence of a mass in the middle ear which impedes the passage of sound waves through the tympanic membrane (TM).<sup>1</sup> Large glomus tympanicum tumours may also cause vertigo, facial palsy, and even sensory neural hearing loss.<sup>2,3,4</sup>

Glomus tumours, interestingly, in rare cases, also produce hormones, such as adrenalin, causing rapid heartbeat, headaches, flushing, sweating, and diarrhea. These symptoms may mimic symptoms of hyperthyroidism and can lead to confusion in diagnosis, which may be cleared up with blood investigations. Small tumours may not be symptomatic and are usually an incidental finding, presenting as a reddish mass under the TM.

Hence, in a patient with an unidentifiable cause of sympathetic activity, presenting to a primary health provider, one of the differentials could be a glomus tympanicum, although rare.

Upon examination, this tumour may be visualized via a microscope or an otoscopy, and is, in view of its highly vascular nature, seen as a reddish mass behind the TM. Imaging studies include computerised tomography Scans (CT scans), magnetic resonance imaging (MRI), and magnetic resonance angiography (MRA).

There are three treatment options for this condition: observation, surgical excision, and radiotherapy. If observation is opted for, then the patient is ideally followed up for a hearing assessment and vertiginous symptoms. In an ideal situation, regular CT scanning is helpful in monitoring tumour progression. This type of tumour is slow growing, occurs at the weak areas within the temporal bone, and very rarely has a malignant transformation.

On the other hand, if surgical excision is preferred, a trans-canal approach to mastoid and petrous surgeries is done based on the location, extension, and structure involved in the disease process.

There are other alternative treatments, such as radiotherapy, which stops tumour growth and is preferred when treating elderly patients.

Early otolaryngology referral is important to adequately manage patients with glomus tympanicum.

### Case summary

A 77-year-old housewife, an independent Malay lady with underlying ischaemic heart disease (with previous stenting), hypertension, hyperlipidemia, and knee osteoarthritis

presented to us with a history of dizziness of 4 years duration that had been increasing in intensity. She claimed that it was more of a spinning type of sensation and not related to postural changes. It was episodic and each episode lasted for about a day. She was forced to lie in bed and was unable to perform her daily activities, during these dizzy spells. There was also history of nausea and vomiting when the dizziness was severe.

There was also a history of pulsatile tinnitus, but no history of ear discharge, ear pain, or any other ear symptoms. However, there were occasional nasal symptoms. There were no throat or laryngeal symptoms.

On examination, the patient was well and

comfortable. Systemic examination of the patient was unremarkable. We proceeded with a nasal endoscopy, which showed no enlarged turbinates and no mass at the nasopharynx. Oral cavity examination was also unremarkable.

There were no symptoms of rapid heartbeat, headaches, flushing, sweating, or diarrhea.

On examination, the left ear was unremarkable (Figure 1). On the right ear, a reddish mass was seen in the right ear with a bulging TM, which was pulsatile (Figure 2). No ear discharge seen, and the TM otherwise appeared healthy. The external auditory canal appeared normal.

Pure tone audiometry revealed a conductive hearing loss pattern on the right (Figure 3).

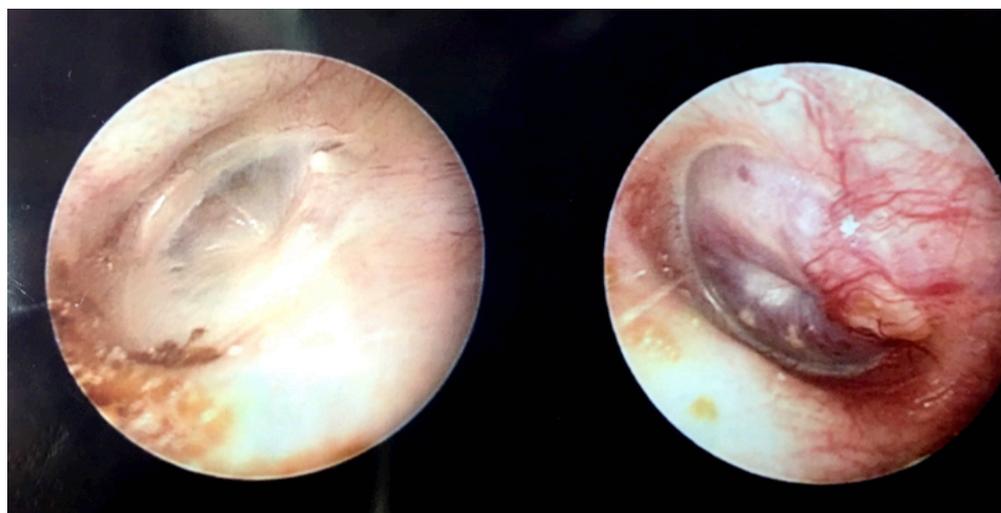


Figure 1

Figure 2

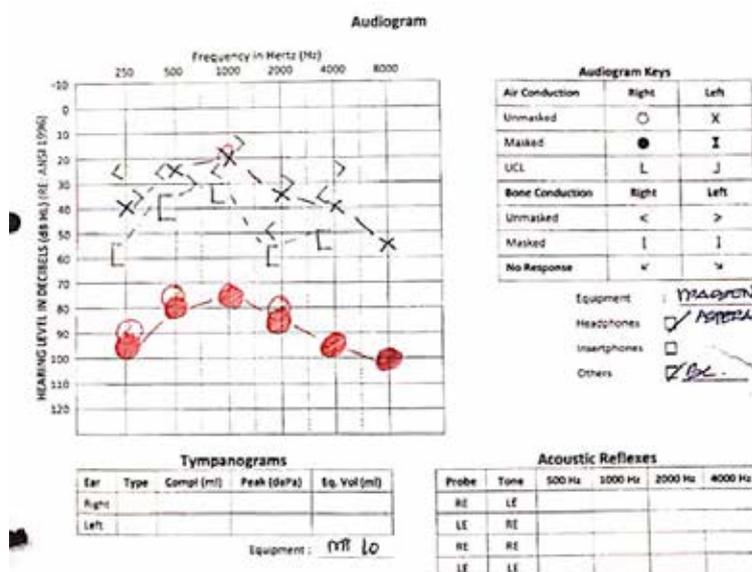
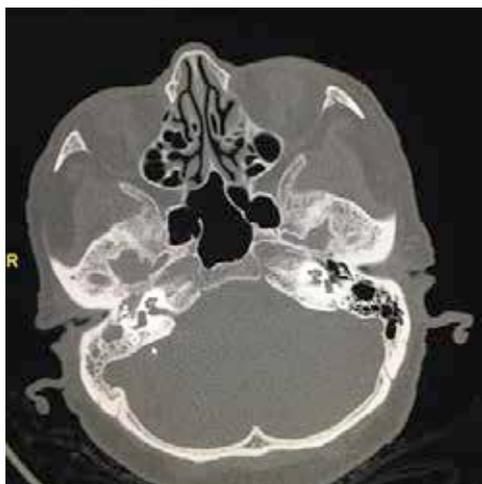


Figure 3: Audiogram showing mild to moderate sensory neural hearing loss and severe conductive hearing loss in the right ear, and mild to moderate hearing loss in the left ear.

The patient was then sent for a high-resolution computerized tomography scan (HRCT Scan) of the right temporal bone, which showed a soft tissue density occupying the mesotympanum and hypotympanum of the right middle ear. There was fluid in the epitympanic recess extending to the aditus, antrum, and mastoid air cells (**Figures 4 and 5**).



**Figure 4**



**Figure 5**

**Figures 4 & 5** CT scans showing the middle ear on the right side occupied by soft tissue, and the right temporal bone filled with fluid, respectively.

The facial nerve canal, external ear canal, cochlea, and semi-circular canals were intact. Concerning the soft tissue in the middle ear, there was a minimally enhanced soft tissue mass abutting the right jugular bulb measuring 1x1x1.3 cm with a poor plane with the right internal jugular vein and internal carotid artery. Subsequently, an MRI was planned. Unfortunately, in view of the patient's previous

history of cardiac stenting, an MRI was contraindicated, and repeat CT scans were suggested instead. The repeat CT scans showed a similar disease process, and the patient was then subjected to radiotherapy by the oncology team, due to the multiple co-morbid making her unfit for surgery.

The patient was subjected to conventional standard radiotherapy of 4000 cGy to the affected site. The observational strategy was not the preferred mode of treatment in this case, as the patient was keen on radiotherapy, and observational management is usually reserved for patients not wanting any intervention.

On follow up of the patient, she was coping well with no worsening symptoms, and the mass was seen as reducing in size.

#### Discussion

Glomus tympanicum commonly develops in the 5th to 6th decades of life, but, in our case, it was diagnosed in the 8th decade. The possible explanation is the slow-growing nature of this type of tumour, which probably started growing during the 5th or 6th decade, and remained asymptomatic until the 8th decade. Physical examination is important in demonstrating the retrotympanic mass as it is an important sign to be elicited to make the diagnosis. It could even be said to be pathognomonic to this condition, i.e., a reddish, pulsatile retrotympanic mass.

Based on clinical observation, glomus tympanicum is said to be most commonly presenting in the right ear, as in our patient, which is probably due to the jugular bulb on the right side being more elevated and dilated. However, this is an observation and hypothesis, and further research and association is required to prove this. Symptoms of facial nerve involvement may also be present, depending on the disease process. With tumours passing the fallopian canal on jugular foramen, auditory tube, carotid canal, and sigmoid sinus, they produce symptoms differently.<sup>5</sup>

There are multiple modalities of treatment for glomus tympanicum. Glomus tympanicum is usually diagnosed around the sixth or seventh decade of life, can be monitored by imaging only, and may not need surgical intervention.

Other modalities of treatment are medical treatment, which includes control of catecholamines by alpha blockers and

betablockers. With reference to our case, we did not start the patient on any alpha or beta blockers, as she was asymptomatic of sympathetic hyperactivity, although she had a background history of hypertension, diabetes mellitus, and ischaemic heart disease. These symptoms, even if present, would have been masked by the medications taken by the patient, as the patient was taking high doses of anti-hypertensives and hypoglycemic agents.

Alpha-blockers and beta-blockers are also usually administered for 2-3 weeks before embolization and surgery to avoid potential high blood pressure fluctuation and arrhythmias.

With regards to glomus tympanicum, the preferred treatment modality is surgical excision of the tumour. Nevertheless, advancements in radio-nuclear medicine, radiation therapy, particularly gamma knife radiosurgery, has been shown to provide promising results with good tumour growth control and low risk of treatment-related cranial nerve injury.<sup>6</sup>

A retrospective study was conducted to analyse the outcome of patients with glomus tympanicum after a partial resection, which showed promising results with good control of the disease and improvement in tinnitus and neurological status.<sup>7</sup> Based on this study, the treatment modality has deviated from conventional surgery as the preferred treatment.

Due to the location of the tumour, resection of this tumour can be a very challenging process and is further complicated due to its abundant

vascularity. Preoperative embolization can also be done for these tumours to reduce bleeding complications.<sup>8</sup> Thus, with the advancement of radionuclear medicine and the gamma knife, we preferred this modality of treatment for our patient due to her multiple co-morbid background. We also selected this modality of treatment in view of the life expectancy of this patient.

Incisional biopsy is contraindicated in this tumour due to the highly vascular nature of the tumour, which will lead to bleeding complications. Tissue diagnosis is necessary to differentiate this tumour from others, thus an alternative is surgical resection and histopathological examination.

### Conclusion

With reference to our case, it is important to tailor the management of glomus tympanicum based on the patient's co-morbidity. The treating physician should also be aware of such a diagnosis, and probing should not be attempted as it could cause a disastrous bleeding event. Physicians should also be open to other modalities of treatment, including use of the gamma knife and radiotherapy, which has shown promising results. It is important to consider the proper approach to and planning of treatment for this disease. When unsure of the diagnosis, a referral should be made to the nearest hospital with otorhinolaryngology facilities.

Hence, in any patient presenting with tinnitus, reduced hearing, and vertigo, an otoscopic examination is mandatory during a clinical office examination by all treating physicians.

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## Hypopigmented patches in an 8-year-old boy

Malek KA, Kamal WW

Malek KA, Kamal WW. Hypopigmented patches in an 8-year-old boy. *Malays Fam Physician*. 2018;13(1):49–51.

### Keywords:

Pityriasis alba,  
hypopigmented patches,  
children.

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### Case summary

An 8-year-old boy presents with asymptomatic hypopigmented patches on his bilateral cheeks which have been worsening for two weeks. The patches are oval in shape and have spared other parts of the body. There is no preceding erythematous rash. Similar lesions appeared two years ago which took several months to resolve. There are no recent triggers, such as personal care products. He has no history of atopy, but his mother has a recent history of atopic eczema. There is no known history of thyroid problems in the family. He was prescribed a topical cream from a general practitioner, but the patches persisted, and new patches appeared. He is otherwise well and actively participating in outdoor physical activities with frequent sun exposure.

On examination, he is afebrile. There are three oval-shaped patches on the right cheek, with one showing fine scales at its edges. There is one round-shaped patch on the left cheek. The patches vary in size, with the largest measuring 1.5 cm in diameter. The edges are ill-defined with no distinctive margins. Sensation is present. There are no rashes seen on other parts of the body. There is no pitting of the nails.



**Figure 1.** The hypopigmented lesions at presentation.

### Questions

1. What is the most likely diagnosis?
2. What are the differential diagnoses?
3. What are the relevant investigations to be conducted?
4. What is the prognosis?
5. What is the management?

### Answers:

1. The most likely diagnosis for this clinical presentation is pityriasis alba (PA), a condition related to atopic dermatitis. This clinical variant of the classic pityriasis alba

(CPA) is most common among children, and it is characterized by hypopigmented macules and patches with ill-defined margins and fine, scaly edges. PA commonly occurs on the face of primary school children. The number of macules and patches range from 1 to 5 with diameters measuring between 0.5 and 5cm. Main risk factors for acquiring PA include being younger than 15 years old, having a darker skin phenotype, and personal or family history of atopy. It can also be associated with over-exposure to the sun and activities that reduce the skin's protective barrier, such as frequent bathing and taking hot baths.<sup>1</sup>

2. An approach to determining differential diagnoses can be based on the age of onset, character and extension of the patches, and a pertinent medical history.<sup>2</sup>

Hypopigmentation is a feature of pityriasis versicolor,<sup>3</sup> although its scaling macules can also be salmon-coloured or hyperpigmented. Unlike pityriasis alba, which occurs in primary schoolers, pityriasis versicolor is prevalent among children 15 years old and younger. While pityriasis alba is localized to the sun-exposed area of the face, the latter has a predilection towards seborrhoeic areas of the head, trunk, and upper back. Clinically, pityriasis versicolor display circular patches with fine scaling which can appear discreetly. They can also coalesce to form large, irregular patches, which are not present in this case. In approximately one out of three patients with pityriasis versicolor, a yellow–green fluorescence is visible when the lesions are shone on with a Wood's light.<sup>4</sup> Pityriasis alba does not have this feature.

Post-inflammatory hypopigmentation due to eczema is not uncommon. This is usually associated with chronic eczema and corresponds to the exact sites. The initial presentation would include signs of eczema, such as pruritus and scaly erythematous papules or patches, which are not present in this case.<sup>3,5</sup>

Other hypopigmented conditions, such as tinea faciei, vitiligo, and Hansen's disease, are potential differential diagnoses, but all of these are unlikely. All four conditions have distinct, well-demarcated margins,<sup>3,6</sup> with tinea faciei exhibiting annular pink erythematous patches with raised borders and central clearing.<sup>6</sup> Vitiligo can masquerade as pityriasis alba, especially when it affects the face of a child less than 10 years old. Vitiliginous patches are depigmented with a milky-white appearance and no scaling.<sup>3,7</sup>

In endemic areas, tuberculoid leprosy, or Hansen's disease, should be suspected. The anaesthetic patches usually have a truncal distribution and increase in size peripherally. Hansen's disease is also associated with thickened peripheral nerves.<sup>8</sup> Therefore, Hansen's disease is unlikely in this case.

Mycosis fungoides (MF), a low-grade

lymphoproliferative disorder, is rare in children, but it is an important differential diagnosis which not to be missed. The classical form can be distinguished from pityriasis alba at an early stage when the lesions manifest much as in eczema or psoriasis, with ill or well-defined patches, which then progress to form plaques and nodules. However, hypopigmented MF, a variant of atypical MF, is rare, but it is more often seen in children with darker skin tone and can be a great imitator and misinterpreted as pityriasis alba. It can present with irregular hypopigmented patches with variably distinct borders preferentially located on the trunk and extremities. Erythema, scaling, and central area of normal pigmentation may be observed. The hypopigmentation develops without preceding skin changes and occasionally with complete depigmentation. In this case, the authors believe that the diagnosis of atypical MF is unlikely at this stage as the hypopigmented patches are localized to the face without central normal pigmentation.<sup>9,10</sup>

3. Pityriasis alba is a clinical diagnosis. There is no need for further investigation. The fine scaly edges of PA do not commonly yield any positive fungal skin scraping or culture results. If *Malassezia* is suspected, a skin scraping of the scales mixed with potassium hydroxide can be taken. Microscopic examination showing hyphae and spores resembling 'spaghetti and meatball' confirms *Malassezia furfur*.<sup>4</sup>
4. Pityriasis alba is benign and will usually resolve without treatment. It may take months to years for the lesions to disappear, but PA tends to relapse. During the prolonged course of recovery, PA may be more visible in dry weather, after tanning, and among those with atopic dermatitis.<sup>1</sup> These may raise aesthetic concerns for patients and parents.<sup>10</sup>
5. Use of protective cover to reduce sun exposure and emollient therapy were given. We prescribed hydrocortisone cream 1% BD to tackle the inflammatory symptoms of underlying eczema. We used a low-potency topical steroid and limited the application by giving several breaks from use to avoid long-term skin atrophy. Other modalities of treatment, such as topical tacrolimus or pimecrolimus (macrolide

immunosuppressive therapy), topical calcipotriol (vitamin D analogue), or psoralen plus ultraviolet light A (PUVA) photochemotherapy, should be considered in refractory cases.

**Funding:** None

**Consent:** The parent of the patient consented to the article and picture.

**Conflict of interest:** None

**Acknowledgement:** We would like to acknowledge Dr Noorhida Baharudin (Family Medicine Specialist, Faculty of Medicine, Universiti Teknologi MARA Malaysia) for her contribution in proof-editing the revised draft of this write up, and Azmel Ahmad Pharmy (Information Technology Consultant, Clue Me In Enterprise) for his aid in proofreading the final draft.

#### How does this paper make a difference to general practice?

- Pityriasis alba (PA) is a common skin condition among the paediatric population consulting general practitioners and is commonly misdiagnosed.
- The step-by-step approach to ascertaining the most likely diagnosis, differential diagnoses, investigation(s), prognosis, and treatment in relation to PA will help general practitioners to structure their thinking in approaching hypopigmented patches, in particular PA.
- Particular attention is given to thorough history taking and examination in ascertaining the diagnosis.
- This paper will aid GPs in reflecting on their current practice in handling paediatric patients with PA who present with hypopigmented skin patches on the face.

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## The man with sweaty palms and soles

Jamani NA, Puteri Shanaz JK, Azwanis AH

Jamani NA, Puteri Shanaz JK, Azwanis AH. The man with sweaty palms and soles. *Malays Fam Physician*. 2018;13(1);52-54.

### Keywords:

Hyperhidrosis, sweaty palms and soles

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### Case History

A 21-year-old male college student presented with excessive severe bilateral sweating of his palms and soles for the past 3 years, which has progressively worsened. His symptoms occur throughout the day but worsened during exams or whenever he felt anxious. The condition has caused him difficulty in holding objects and writing assignments, and has resulted in public embarrassment on several occasions. He has to wipe his hands with a handkerchief each time they sweat. He also needs to change his socks frequently. No other area of his body is similarly affected. He denied any associated symptoms, such as pungent body odour, changes in weight, fever, heat intolerance, or changes in bowel habits. He has no known medical illness and is not on any medication.

Clinical examination revealed bilateral profuse sweating of the palms and soles. Other examinations were unremarkable.



**Figure 1:** Increased sweatiness over bilateral palms

### Questions

1. What is the most likely diagnosis?
2. What are the differential diagnoses?
3. What investigation is indicated?
4. What is the management?

### Answers:

1. Primary hyperhidrosis (palmoplantar).
2. Secondary causes of hyperhidrosis, such as thyrotoxicosis, Hodgkin's disease, chronic alcoholism, tuberculosis, and diabetes mellitus.
3. Additional laboratory tests are not needed if the presentation is characteristic of primary focal hyperhidrosis and there is no suggestions of a secondary disorder.
4. Initial management for palmoplantar hyperhidrosis is supportive, which includes

keeping the hands and feet as dry as possible by use of absorbent hand and foot powders. For plantar hyperhidrosis, wearing shoe inserts, as well as frequent changing of socks and shoes could also help. Treatment options for primary hyperhidrosis include medical and surgical treatments. Medical treatments include therapy, such as topical aluminium chloride, oral anticholinergic agents, iontophoresis, and botulinum toxin A injections. Surgical therapy includes endoscopic thoracic sympathectomy.

### Discussion

Primary hyperhidrosis is defined as excessive sweating, i.e., more sweating than what is required for the body's thermoregulation. It is due to excessive function of the sudomotor sweat control system in the absence of a sweating trigger.<sup>1</sup> It has been documented in approximately 1-3% of the western and general population.<sup>2,3</sup> This condition can cause psychosocial disturbances in social relationships and quality of life.<sup>4</sup> Primary hyperhidrosis usually affects sweat glands of the palms, soles, and axillae and craniofacial regions.

The diagnosis of primary idiopathic focal hyperhidrosis must involve focal, visible, excessive sweating of at least 6 months' duration with no apparent cause which includes at least two of the following characteristics:<sup>2</sup>

- Be bilateral and relatively symmetric
- Impairs daily activities
- Frequency of at least one episode per week

- Age of onset less than 25 years
- Positive family history
- Cessation of focal sweating during sleep

However, when the sweating is generalized, other secondary causes should be assessed and excluded. Secondary causes of hyperhidrosis include many pathologies, ranging from infections; malignancies, such as lymphomas; medication; anxiety; and neurological and endocrine disorders, such as thyrotoxicosis and pheochromocytoma.

Other than generalized sweating, indications that a patient has secondary hyperhidrosis include night-time sweating (which may indicate haematological cancer or infection, such as tuberculosis), weight loss (cancer), palpitations (thyrotoxicosis), history of illicit drug use, use of drugs with related side effects, or generally feeling unwell. Thus, certain tests need to be done when secondary hyperhidrosis is suspected, such as a thyroid function test, full blood count, peripheral blood film, chest radiograph, and CT scanning.<sup>5</sup>

For most cases of primary hyperhidrosis, the diagnosis is usually clinical; therefore, further investigation or laboratory tests are not usually required. However, objective testing may be used for difficult or questionable cases.<sup>5</sup> A starch iodine (Minor's) test can be done in order to map the area of excessive sweating before treatment is given.

Assessment by gravimetry and evaporimetry for quantification of the sweat can also be done for further assessment, but this is usually reserved for research purposes.<sup>6</sup> The severity of excessive sweating can be also be assessed by using the four-point, single-item Hyperhidrosis Severity Disease scale. This is a diagnostic tool that provides a qualitative measure of the tolerability of the patient's symptoms and interference with daily activities.<sup>7</sup>

Primary hyperhidrosis can be treated medically and surgically. The latter is reserved for when first-line medical treatment fails. For palmoplantar hyperhidrosis, initial non-

pharmacological measures include keeping the hands and feet as dry as possible by use of absorbent powders containing aluminium chloride. Aluminium chloride, which acts as an active ingredient in antiperspirant, is thought to provide physical blockage of the eccrine sweat gland, causing its degeneration.<sup>8,9</sup>

Topical aluminium chloride may not be as effective in controlling the symptoms of palmoplantar hyperhidrosis as it is for treating axillary hyperhidrosis.<sup>7</sup> Therefore, iontophoresis with tap water can be offered for patients who do not respond or cannot tolerate topical aluminium chloride on their hands. This is an effective method for achieving euhydrosis.<sup>10</sup> An electric current is passed through water, and the affected area is immersed for 20-30 minutes to help control symptoms; this produces favourable results in most patients.<sup>8</sup>

Botulinum toxin intradermal injection is also a treatment for this condition if patients do not give satisfactory response to antiperspirants or iontophoresis.<sup>10</sup> However, these medical treatments may not result in complete or permanent euhydrosis. Surgical treatment, such as endoscopic thoracic sympathectomy (ETS), is usually more effective in achieving complete dryness and results in greater satisfaction.<sup>11,12</sup> ETS is usually recommended for severe palmoplantar hyperhidrosis and when other treatments have failed.<sup>13</sup>

Short-term oral anticholinergic (e.g., glycopyrronium bromide, propantheline) can be taken, as required, in addition to other therapies by those patients with symptoms aggravated in known anxiety-provoking situations.

In addition, good patient education regarding hyperhidrosis should be given as to manage treatment options and patient expectations. This is because a severe form of hyperhidrosis can lead to great emotional distress and social embarrassment that may result in depression.

#### Conflict of interest

None

**How does this paper make a difference to general practice?**

Hyperhidrosis may have negative impacts, such as physical discomfort, social awkwardness, and impairment of work performance and productivity, which may have devastating effects on the mental health of affected patients. Therefore, it is important that primary care physicians carry out an assessment of the impact of the condition on the patient's life, as early identification and proper management of patients with hyperhidrosis are crucial to lessen the emotional, psychosocial, and physical impact of their condition.

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# TEST YOUR KNOWLEDGE

## A child with coated tonsils

Appannan VR, Mohamad I, Ramli RR, Johan KB

Appannan VR, Mohamad I, Ramli RR, et al. A child with coated tonsils. *Malays Fam Physician*. 2018;13(1):55–56.

### Keywords:

Tonsil; Child; Diphtheria;  
Prophylaxis

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### History

A 5-year-old girl presented with a history of fever for four days associated with odynophagia. She was treated with amoxicillin prescribed by a general practitioner for 3 days prior to presentation. However, the symptoms were worsening and associated with drooling of saliva and poor oral intake. There was history of recurrent acute tonsillitis in the past two years, with 5 to 6 episodes per year. The child had completed regular immunizations up to her current age. There was no similar presentation amongst family members and friends.

On examination, the child was comfortable, with no observed stridor or wheezing. She was not tachycardic. There was, as mentioned, drooling of saliva. An oral cavity examination was performed (**Figure 1**), and other system other system examinations were uneventful.



**Figure 1:** The coated tonsils in this case, with more on the left tonsil

### Questions

1. State the findings.
2. What is the most probable diagnosis?
3. How should the diagnosis be confirmed?
4. What prophylactic measures should be taken?

### Answers

1. An oral cavity examination showed bilaterally enlarged tonsils (grade 3) with a thick coating of grayish pseudomembrane, which was more pronounced on the left tonsil. Although there was no bleeding when the pseudomembrane was scraped, there was discomfort and pain associated with the act, which indicated diphtheria, although, in diphtheria, the membrane adheres and bleeds when an attempt to scrape the membrane is made.
2. The most probable diagnosis for this child is diphtheria. The fact that the grayish substance on the tonsils could be scraped is an indication of the presence of a pseudomembrane. The diagnosis is also supported by the fact that the child was drooling saliva.
3. To come to a diagnosis of diphtheria, a high index of clinical suspicion is required. Samples should be taken from the throat or nasopharynx or both, if necessary, and sent for culture. In other forms of diphtheria, such as the cutaneous form, culture samples should be taken from the wound or any skin lesions. When there is a membranous material, it should also be taken and examined, and care should be taken to obtain the material beneath the membrane, as well.<sup>1</sup>

Specimens obtained should be transported immediately to the laboratory to enable rapid inoculation of the organism in order to obtain the best results. Specimens should be ideally cultured in blood agar and selective tellurite media. This media inhibits the growth of normal flora, and organisms, such as diphtheria, produce characteristic black colonies.<sup>2</sup> Other basic investigations include full blood counts, a renal function test for assessment of hydration and acute kidney injury secondary to dehydration in a child with poor oral intake, and a chest radiograph in the case of respiratory diphtheria.<sup>3</sup>

4. In managing diphtheria, household contacts and health personnel who were in close contact and did not wear personal protective equipment should also be covered with post-exposure prophylaxis. In the case of close contacts, such as household contacts, diphtheria boosters appropriate for age should be administered. Contacts should receive antibiotics. A single dose of IM benzathine penicillin G (600,000 units for persons younger than 6 years old and

1,200,000 units for those 6 years old and older) should be administered or a 7 to 10 day course of oral erythromycin (40-50 mg/kg/ day, maximum 2g/day for children and 1 g/day for adults) should be prescribed.<sup>4</sup> The health ministry should also be notified when diphtheria is suspected to enable contact tracing and further management in curbing the disease from spreading.<sup>5</sup>

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## Single rare central lesion with triple common aerodigestive symptoms

Mohamad I, Mohamad IS, Nik Hassan NFH

Mohamad I, Mohamad IS, Nik Hassan NFH. Single Rare Central Lesion with Triple Common Aerodigestive Symptoms. *Malays Fam Physician*. 2018;13(1);57–58.

### Keywords:

Hoarseness; Dyspnea; Dysphagia; Aneurysm; Aorta

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### Case Summary

An elderly gentleman with a known history of well-controlled hypertension presented with a three-week history of hoarseness associated with mild breathlessness. There was no episode of cyanosis, no noisy breathing, and no reduction in effort tolerance. There was also no history of chest pain or orthopnea. He denied any feeling of food stuck in his throat or chest, and he had no history of choking sensations during meals. He, however, was unable to count from 1 to 10 in one breath, and lung auscultation revealed reduced air entry on both sides. A chest radiograph was then obtained.



**Figure 1:** Chest radiograph showing a mediastinal radiopaque mass as the cause of the symptoms.

### Questions

1. What is your diagnosis?
2. What is the pathophysiology of the symptoms?
3. What should be done?

### Answers

1. The diagnosis is aortic arch aneurysm. Most patients with the condition are asymptomatic, and they are commonly diagnosed with a chest radiograph.<sup>1</sup> The features include widening of the mediastinal silhouette, enlargement of the aortic knob, and displacement of the trachea from the midline.
2. The presence of a huge aneurysm can, by itself, cause restriction of lung expansion, thus reducing expiratory volume. This can lead to breathlessness and hoarseness. Hoarseness also can be caused by recurrent laryngeal nerve compression by the aortic arch aneurysm. This is due to the close anatomical proximity between the aortic arch and the left recurrent laryngeal nerve; hoarseness, alone, can be the sole symptom of an impending aortic aneurysm rupture.<sup>2</sup> The huge aneurysm can also cause dysphagia as the arch of the aorta also crosses the oesophagus. The symptoms of the oesophagus compression by the aortic aneurysm can mimic symptoms of achalasia.

These three symptoms of hoarseness, breathlessness, and dysphagia are an indication that the size of aneurysm is quite significant. This condition explains the breathlessness; continuous air leakage during phonation results in a short breath span. The patient will not be able to count from 1 to 10, speak in long sentences, or have strong coughs. This is because, for an adequate subglottic pressure that is the prerequisite for speaking, counting or coughing, both of the vocal cords must have a good glottic closure. The presence of a unilateral vocal cord paresis will lead to a glottic gap, thus contributing to continuous air leakage.

3. The patient with suspected vocal

cord paresis should be referred to an otolaryngologist for further laryngoscopic examination. If the lesion is only one-sided and the paralysed cord is in the paramedian position, then the compensatory mechanism is to try to move the opposite cord beyond the midline to achieve a good adduction with the paralysed cord, thus eliminating the symptoms attributed by the glottic gap. If the paresis is bilateral, airway intervention,

such as a tracheostomy, may be required. Laser posterior cordectomy may be one of the alternatives to avoid tracheostomy.<sup>3</sup> Cardiothoracic and vascular surgeons should assess his aneurysm status once the airway is stabilized. Subsequent proper investigations would require an evaluation of the entire aorta with computed tomography scan or magnetic resonance angiography.<sup>1</sup>

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