ORIGINAL ARTICLE

INTERNATIONAL JOURNAL OF RESEARCH IN PHARMACEUTICAL SCIENCES

Published by JK Welfare & Pharmascope Foundation Journal Home Page: https://ijrps.com

Awareness of Ludwig's Angina Among Dental Practitioners

Reshma Thirunavakarasu, Dhanraj Ganapathy*, Subhashree Rohinikumar

Department of Prosthodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Chennai, Tamil Nadu, India

Article History:

Received on: 25 Jul 2020
Revised on: 20 Aug 2020
Accepted on: 26 Aug 2020

Keywords:

Awareness,
ludwigs angina,
dental,
infection

ABSTRACT

Ludwig's angina is life-threatening cellulitis. It is primarily seen involving the submandibular space followed by secondary involvement of the submental space. This disease has an aggressive character and spreads rapidly causing a compromised airway with little warning. The aim of the study is to determine the level of knowledge and awareness of dental practitioners regarding Ludwig's angina and its management techniques. A total of 10 multiple choice questions were formed and distributed to 100 dental practitoners with more than five years of experience. All ten questions assessed the knowledge of dental practitioners regarding Ludwig's angina and awareness of the various management techniques. After all the participants have given their response, their responses were noted and tabulated. All the respondents were aware of the cause and causative factors of Ludwigs, angina. 78% said it is cellulitis. Broad-spectrum antibiotics are the choice in 78% of the respondents. 80% are aware this condition involves multiple space infections and 64% said they can diagnose this condition based on clinical features. The awareness of management techniques of Ludwig's angina was high among dental practitioners. The importance regarding knowledge of various disease which mainly affects the head and neck region is crucial for dental practitioners. Thus it is essential for the dental practitioners to have knowledge of the conditions and be aware of the management of these conditions.

*Corresponding Author

Name: Dhanraj Ganapathy
Phone: 9841504523
Email: dhanrajmganapathy@yahoo.co.in

ISSN: 0975-7538

DOI: https://doi.org/10.26452/ijrps.v11iSPL3.3319

Production and Hosted by

IJRPS | https://ijrps.com

INTRODUCTION

Ludwig's angina is life-threatening cellulitis. It is primarily seen involving the submandibular space followed by secondary involvement of the submental space. This disease has an aggressive character and spreads rapidly causing a compromised airway with little warning (Kurien *et al.*, 1997; Kaur *et al.*, 2017). it is seen mostly in young adults due to dental infections; however, it may develop among children (Kaur *et al.*, 2017). This was first described by Wilhelm Frederick Von Ludwig in 5 patients in. As we know, the submandibular space is divided into the submaxillary and sublingual spaces with the mylohyoid muscles between the two. In some patients, it is secondary to abscess of a posterior molar. The infection will penetrate through the inner table of the mandible to the submaxillary space, around the mylohyoid to the sublingual space. The spread of infection is contained anteriorly by the mandible and inferiorly by the mylohyoid (Candamourty *et al.*, 2012; Robbins and Robbins, 1990).

Ludwig's angina is a potentially lethal infection with a mortality of 8% (Candamourty *et al.*, 2012; Pak *et al.*, 2017). This evolves from odontogenic infec-

Table 1: Questionnaire

Question	A	B	C	D
1. First person to describe Ludwigs Angina?	Wilhelm Friedrich Von Ludwig	Robert Hooke	Hippocrates	
2. Cause of Ludwigs angina ?	Bacterial	Viral	Fungal	
3. Causative organism ?	Streptococcus	Enterovirus	Herpes virus	
4. Also commonly known as ?	Pterygoid space infection	Submandibular space infection	Massetric space infection	
5. Progressive cellulitis or an Abscess?	Cellulitis	Abscess		
6. Ludwigs angina is due to ?	Dental infection	Immunocompromised patients	Hypersensitivity	
7. Initial line of treatment ?	Incision and drainage	Broad-spectrum antibiotic	Tracheostomy	
8. Preferred antibiotic prescribed?	Penicillin	Cephalosporin	Metronidazole	
9. Spaces involves?	Submandibular	Submental	Sublingual	All three
10. How will you diagnose a patient with Ludwigs Angina ?	Clinical presentation	Dental X Rays	Patient history	

Table 2: Knowledge and Awareness of Ludwigs Angina among Dental Practitioners

Question	A	B	C	D
1. First person to describe Ludwigs Angina?	97	0	3	
2. Cause of Ludwigs angina ?	100	0	0	
3. Causative organism ?	100	0	0	
4. Also commonly known as ?	3	96	1	
5. Progressive cellulitis or an Abscess?	78	22		
6. Ludwigs angina is due to ?	87	10	3	
7. Initial line of treatment ?	10	78	12	
8. Preferred antibiotic prescribed?	88	0	12	
9. Spaces involves?	12	3	5	80
10. How will you diagnose a patient with Ludwigs Angina ?	64	36	0	

tions, a penetrating injury in the floor of the mouth, osteomyelitis or fracture of the jaw, otitis media, tongue piercing, sialdenitis or silaolithiasis of the submandibular gland There are various predisposing factors to this disease which includes dental caries, systemic illnesses such as diabetes mellitus, malnutrition, alcoholism and compromised immune system (Balasubramanian *et al.*, 2014; Moreland, 1988). Ludwig's angina in children can occur de novo without any apparent precipitating cause.

Early diagnosis and immediate initiation of the appropriate treatment must be made for this condition. Treatments incision and drainage of exudates from the associated space bilaterally, extraction of offending tooth/teeth, aggressive antibiotics (penicillin and metronidazole) and fluid therapy. These are important in the management of this odontogenic infection. Airway management is the first step into managing Ludwig's angina as airway compromise can lead to the death of the patient. Intravenous steroids and nebulized adrenaline use have been shown to allow for easier intubation avoiding tracheostomy or cricothyroidotomy. It allows for increased penetration of antibiotics into the fascial space by reducing oedema and cellulitis (Har-El *et al.*, 1994). Surgery is indicated for patients who develop abscesses and are unresponsive to antibiotics and medical management which is achieved

by decompression of the submental, submandibular and sublingual spaces by external incision and drainage

Thus, the aim of this study is to determine the level of knowledge and awareness of dental practitioners regarding Ludwig's angina and its management techniques.

MATERIALS AND METHODS

A total of 10 multiple choice questions were formed and distributed to 100 dental practitoners with more than five years of experience. All ten questions assessed the knowledge of dental practitioners regarding Ludwig's angina and awareness of the various management techniques. Table 1 shows the questionnaire which was distributed to the dental practitoners

RESULTS AND DISCUSSION

After all the participants have given their response, their responses were noted and tabulated. Table 2 shows the responses to the questions.

All the respondents were aware of the cause and causative factors of Ludwigs, angina.78% said it is cellulitis. Broad-spectrum antibiotics are the choice in 78% of the respondents.80% are aware this condition involves multiple space infections and 64%said they can diagnose this condition based on clinical features (Table 2).

97% of the participants are aware of the man who first describes Ludwig's angina. This shows that majority of the students were aware of the term Ludwig's angina and the awareness regarding the term Ludwig's angina is relatively good. However, there has been a study conducted among dental students which showed that only 53.5% of the students were aware that Wilhelm Friedrich Von Ludwig was the main to first describe this condition. Our study showed that 100% of the participants are aware of the causative organism and the main causes of this condition. We can deduce that the importance regarding the knowledge of the causative organism is to differentiate it from other conditions.

This study also shows that 96% of the participants were aware of the other of this condition which is submandibular space infection. The name given is mainly due to the path of the spread of infection as it involves the submandibular space (Chow, 1992). As stated, Ludwig's angina is bilateral and can spread rapidly, secondary to being compartmentalized within the submandibular space (Endicott *et al.*, 1982; Reynolds and Chow, 2007). There is another term used to describe Ludwig's angina which is 'bulls neck'. This name was used to describe this condition due to its path of the spread of infection. As we know, Ludwig's angina spreads via the fascial spaces, which are submandibular, submental and sublingual spaces, 80% of the participants have selected all three spaces to be involved in this disease. The participants are aware that this condition involved all three spaces.

The most common confusion regarding this condition is whether to call it cellulitis or abscess, and it is evident that certain participants were still unaware. Only 78% of the participants have selected that Ludwig's angina is a type of cellulitis. There are many literatures available which mention that Ludwig's angina is life-threatening cellulitis.

Knowledge regarding the causative organisms and the spread of this disease will aid in the treatment/management of this disease (Srirompotong and Art-smart, 2003). About 78% of the participants have chosen broad-spectrum antibiotics as the initial line of treatment. Thus about 88% of the participants are aware that penicillin belongs to the broad-spectrum antibiotic class. As we know that the cause of this disease is due to a bacterial infection, thus antibiotics are the best option to be prescribed.

CONCLUSION

The awareness of management techniques of Ludwig's angina was high among dental practitioners. The importance regarding knowledge of various disease which mainly affects the head and neck region is crucial for dental practitioners. Thus it is essential for the dental practitioners to have knowledge of the conditions and be aware of the management of these conditions.

Funding Support

The authors declare that they have no funding support for this study.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

REFERENCES

Balasubramanian, S., Elavenil, P., Shanmugasundaram, S., Himarani, J., Raja, V. K. 2014. Ludwig's angina: A case report and review of management. *SRM Journal of Research in Dental Sciences*, 5(3):211.

Candamourty, R., Venkatachalam, S., Babu, M. R., Kumar, G. 2012. Ludwig's angina - An emergency:

A case report with literature review. *Journal of Natural Science, Biology and Medicine*, 3(2):206.

Chow, A. W. 1992. Life-Threatening Infections of the Head and Neck. *Clinical Infectious Diseases*, 14(5):991–1004.

Endicott, J. N., Nelson, R. J., Saraceno, C. A. 1982. Diagnosis and Management Decisions in Infections of the Deep Fascial Spaces of the Head and Neck Utilizing Computerized Tomography. *The Laryngoscope*, 92(6):630–633.

Har-El, G., Aroesty, J. H., Shaha, A., Lucente, F. E. 1994. Changing trends in deep neck abscess. *Oral Surgery, Oral Medicine, Oral Pathology*, 77(5):446–450.

Kaur, M., Pandey, M., Sanwal, M., Jain, A., Sinha, S. 2017. Ludwig's angina in children anesthesiologist's nightmare: Case series and review of literature. *Journal of Anaesthesiology Clinical Pharmacology*, 33(3):406.

Kurien, M., Mathew, J., Job, A., Zachariah, N. 1997. Ludwig's angina. *Clinical Otolaryngology and Allied Sciences*, 22(3):263–365.

Moreland, L. W. 1988. Report of a case and review of the literature. *Archives of Internal Medicine*, 148(2):461–466.

Pak, S., Cha, D., Meyer, C., Dee, C., Fershko, A. 2017. Ludwig's Angina. *Cureus*.

Reynolds, S. C., Chow, A. W. 2007. Life-Threatening Infections of the Peripharyngeal and Deep Fascial Spaces of the Head and Neck. *Infectious Disease Clinics of North America*, 21(2):557–576.

Robbins, K. T., Robbins, K. T. 1990. Operative challenges in otolaryngology-head and neck surgery. *Head and Neck*, 872:79–80.

Srirompotong, S., Art-smart, T. 2003. Ludwig's angina: a clinical review. *European Archives of Oto-Rhino-Laryngology*, 260(7):401–403.