Research Article

Knowledge and awareness of undergraduates about Ludwig's angina

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ABSTRACT

Aim: The aim of this survey is to assess the knowledge and awareness of undergraduates about Ludwig's angina. **Background:** Ludwig's angina has long been a fearful infective condition. The infection itself can be fatal and can cause damage to the body. Recently, the occurrence of this infection has regressed drastically to the point of it being zero to none. Due to that reason, medical professionals are only theoretically equipped with the management and knowledge about Ludwig's angina. Ergo, this study is mainly done to assess the knowledge and awareness of undergraduates about Ludwig's angina. **Materials and Methods:** A questionnaire of 10 questions was drafted and put up on a surveying website called SurveyMonkey. The link to the questionnaire was then distributed to as many as 100 undergraduate students. The results were then obtained through the website and were then tabulated accordingly. **Results:** The results concluded that the undergraduate students did, in fact, have concrete knowledge and understanding about Ludwig's angina. **Conclusion:** It can be concluded that majority of the undergraduates are aware of the medical aspect of Ludwig's angina and can assess the infection clinically as well as theoretically.

KEY WORDS: Airway constriction, First line of treatment, Infection, Lower molars, Ludwig's Angina, Management

INTRODUCTION

Ludwig's angina is a diffuse odontogenic[1] cellulitis in the sublingual, submental, and submandibular spaces, characterized by its propensity to spread rapidly to the surrounding tissues. It is also known as bull's neck.

Karl Friedrich Wilhelm von Ludwig was the first person to understand Ludwig's angina and was able to accurately describe it.[11] Ergo, in 1836, he described it as a rapid, aggressive, progressive, edematous occurrence of the soft tissues of the neck as well as the floor of the mouth. It arises from the region of the submandibular gland with elevation and displacement of the tongue. The disease extends by infection spreading rather than lymphatic spread. Airway obstruction has been evident as the leading cause of death. However, since modern medicine is always under constant improvisation, the introduction of antibiotics has drastically impacted the rate of occurrence of Ludwig's angina, causing the occurrence to reduce significantly. Although the introduction of modern medicine has made a positive impact on health, the exposure of doctors to Ludwig's angina is getting scarce, leaving them inexperienced, and less exposed to the mode of treatment.

It usually evolves from odontogenic infections, a penetrating injury in the floor of the mouth, osteomyelitis or fracture of the jaw, otitis media, tongue piercing, sialadenitis, or silaolithiasis of the submandibular glands.[3] Predisposing factors include dental carries and treatment that has been done at a recent date regarding dental pain, systemic illnesses that are long term such as diabetes mellitus, malnutrition, alcoholism, and compromised immune system such as active immunodeficiency syndrome, and organ transplantation and trauma.[2-5]

In children, it can sometimes occur without any apparent cause.[6,7] Early recognition of the disease is of paramount importance. Painful neck inflammation, toothache, dysphagia, dyspnea, fever, and malaise are the most common complaints. Neck inflammation and a protruding or elevated tongue are seen in most cases. Stridor, trismus, cyanosis, and tongue displacement suggest an impending airway crisis. Edema and

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induration of the anterior neck, often with cellulitis, may be present in advanced cases. Early signs and symptoms of obstruction may be subtle.

The severity of Ludwig's is mainly due to the fact that the airway will be obstructed and patient will have difficulty in maintaining airway which will lead to difficulty in breathing, which will cause the patient to suffocate and ultimately, die. There are other ways to manage Ludwig's angina.

Each patient should have a personalized treatment plan. The stage of the infection, doctors experience, resources that are at their reach, and personnel are all paramount aspects in the planning out the treatment and making a decision.[8] Constant involvement of the anesthetic and otolaryngology team is crucial. If surgical procedure is required, then airway control becomes mandatory. Airway observation policy is appropriate in selected cases of lesser severity. Flexible nasotracheal intubation requires skills and experience. Cricothyrotomy and tracheostomy are an alternative method that should be done under local anesthesia. It is mostly the treatment of choice for advanced stage as it helps maintain airway. Tracheostomy and cricothyrotomy can, in such cases, be associated with difficulties and complications.[9,10]

The aim of this survey is to assess the knowledge and awareness of undergraduates about Ludwig's angina. Many medical professionals have limited experience with the disease due to its rare occurrence. The methods of managing this infection must consist quick and immediate diagnosis and the approach of this infection should contain the anaesthetic team, otolaryngology teams, with accurate maintainence of the airway, being the paramount of goals in all patients presenting with Ludwig's angina.

MATERIALS AND METHODS

A sample size (N) of 100 undergraduates was used. Each student was given a link to an online survey website where 10 multiple choice questions to them. Figure 1 shows the questionnaires that were given to them on SurveyMonkey.

The questionnaire was distributed through a weblink that was obtained from the website. The data were updated on the website every time someone attempted the questionnaire. The results obtained were made into pie charts and the data were tabulated based on percentile value.

RESULTS

Based on the results obtained, Graph 1 shows that most of the questions were answered by students in the 4th year. Graph 2 implies that the undergraduates knew the definition of Ludwig's angina and 32.6% of them said that it was a rapidly progressing cellulitis which can cause airway obstruction. 53.5% of the undergraduates answered Wilhelm Friedrich as the

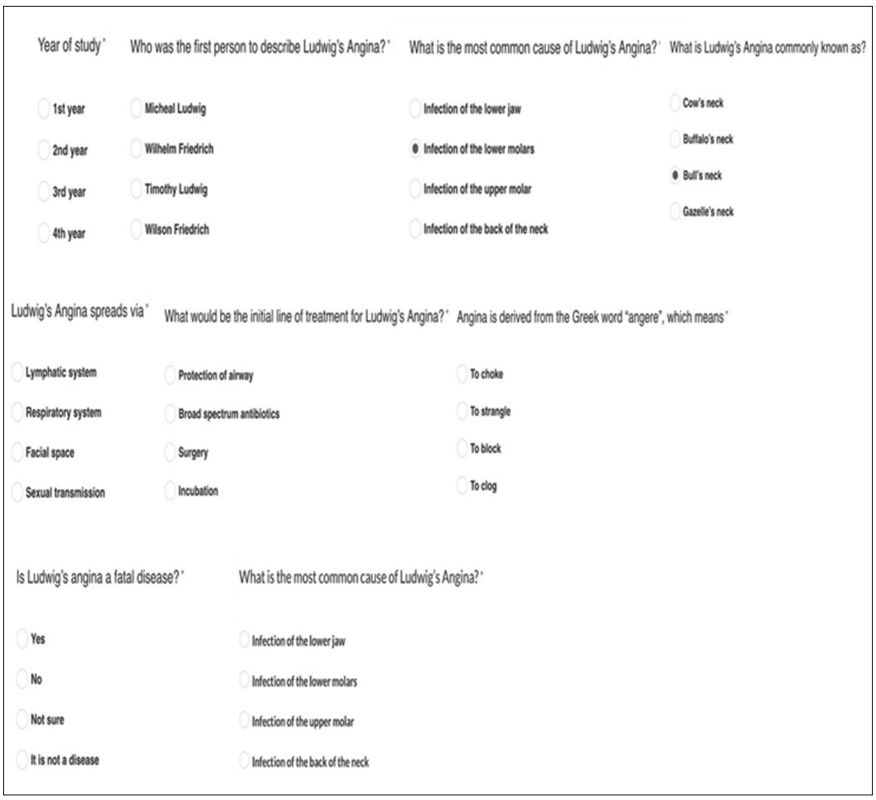
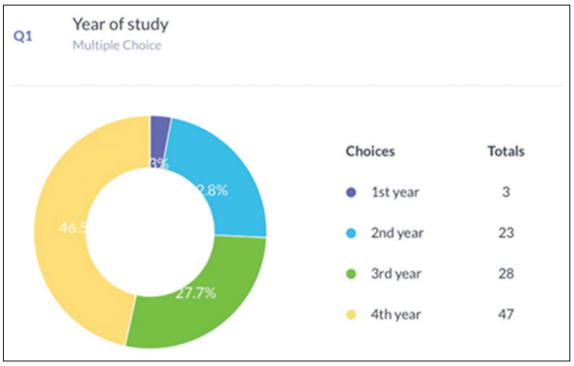


Figure 1: Questionairre for the study

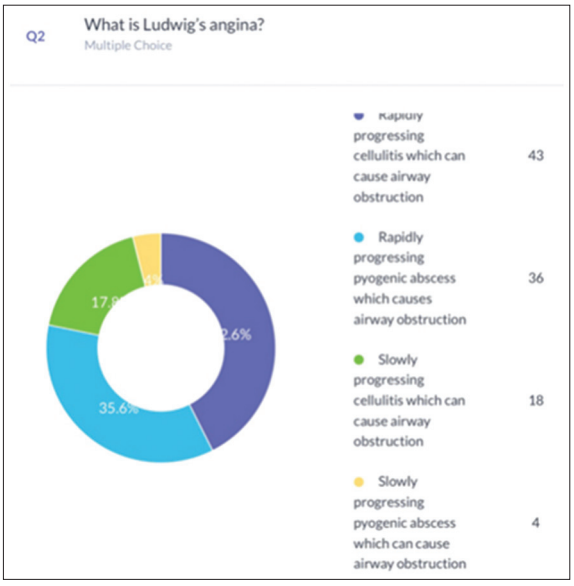
first person to describe Ludwig's angina which is the right choice that is clearly seen in Graph 3. With this, it can be safely assumed that the undergraduates have a basic idea about Ludwig's angina.

Graph 4 shows that the most common cause of Ludwig's is infection of the lower molar, and 50.5% of the students were right based on the survey conducted. Graph 5 indicates that bull's neck is synonymous to Ludwig's angina. When tested about that fact, 56.4% of the students answered correctly. The spreading of this infection was also made into a query and Graph 6 shows 57.4% of the students chose facial space as their choice of answer, which is apt. Many of us have the misconception of it being spread through the lymphatic system for the sole reason of it being an infection. However, Ludwig's angina does not spread through lymphatic system but the facial space.

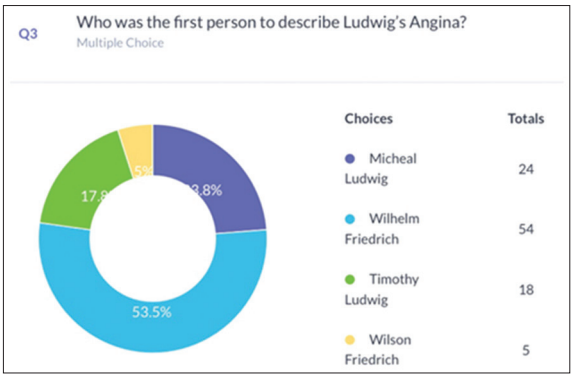
The initial line of treatment for Ludwig's angina is to protect the airway. However, in Graph 7, 26.7% of the students chose broad-spectrum antibiotics which are the second line of treatment. Based on Graph 8, the best medication to be prescribed for Ludwig's angina is penicillin, and 56.4% of the students have opted for that. Graph 9 states that angina is derived



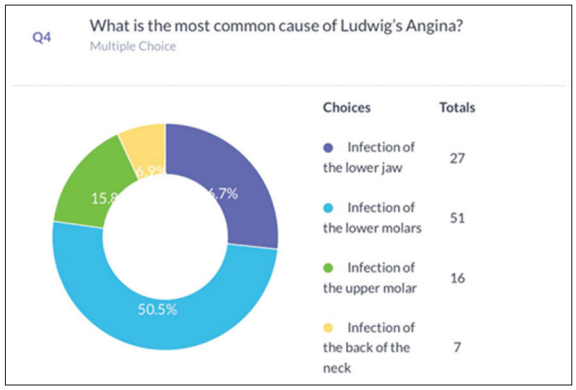
Graph 1: Year of study



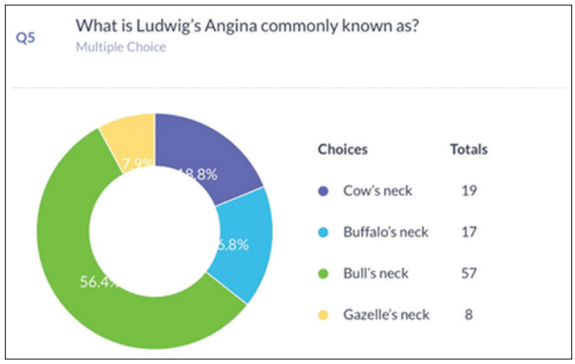
Graph 2: Definition of Ludwig's angina



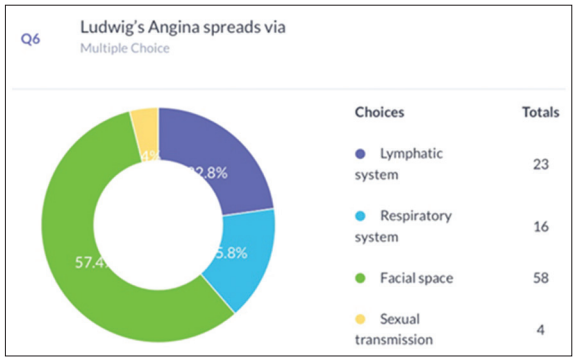
Graph 3: Description of Ludwig's angina



Graph 4: Cause of Ludwig's angina



Graph 5: Common name of Ludwig's angina



Graph 6: Spread of Ludwig's angina

from the Greek word angere which directly translates to "to strangle" and 54.5% of the students chose that option. Ludwig's angina is commonly mistaken to be a disease and Graph 10 shows that 45.3% of the students have claimed to not be confused with the fact that it is in fact not a disease but an infection.

DISCUSSION

The results showed that the students were from the final year and that they have grasped the knowledge about Ludwig's angina as a whole.

Majority of them were aware that Ludwig's angina is, in fact, a rapidly progressing cellulitis which causes airway obstruction, instead of it being a pyogenic abscess. Most common misconception regarding Ludwig's angina is that is of pyogenic origin and that it is a disease.[12] With this questionnaire, it can be assumed that the students are knowledgeable regarding this infection.

The first person to describe Ludwig's angina is Wilhelm Friedrich. Historically, in 1836 and 1837, various literary articles were published on the infection on cellular tissues in the neck region. Medical experts examined the cases and came up with many names to best suit the condition.

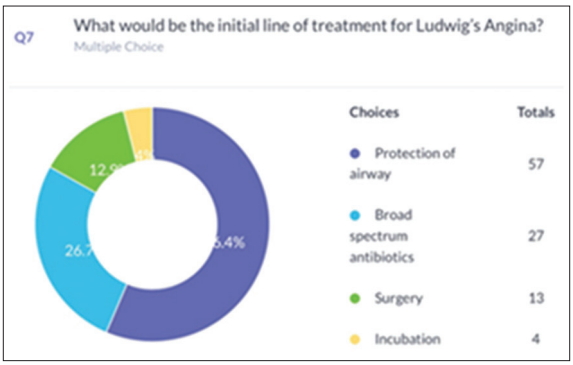
They include "cynanche cellularis maligna" and "morbus strangulatorius." Those names, however, accurate they may be in describing the infection, did not accurately serve the purpose. In 1836, Wilhelm Friedrich von Ludwig, of Stuttgart who was the personal physician to the King of Württemberg described the condition as an infection in the neck region and termed it as Ludwig's angina.[13]

The most common cause of this infection is the infection of the lower molars, which is seen in almost 90% of the reported cases.[6,16,17] Tschiassny,[17] in 1943, explained the relationship of the roots of the mandibular molar to the mylohyoid ridge, with which the mylohyoid muscle is attached to. The roots of the lower second and third molars are placed along the lower aspect of the mylohyoid attachment.

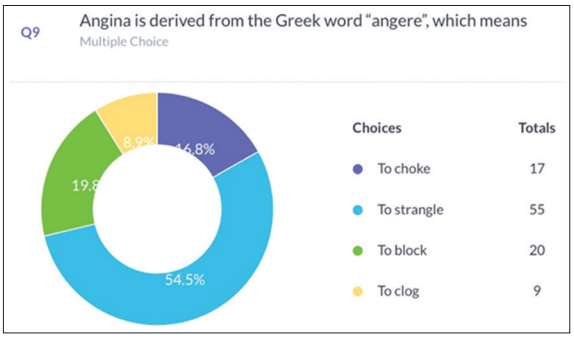
Subsequently, a root abscess may form and rupture through the thin lingual cortex into the submandibular space. Infection of the first lower molar or premolar root apices, which are located above the mylohyoid attachment, first spreads into the sublingual space.[13] It is usually seen in the second–sixth decades of life.[15,16] It is more prevalent in males compared to females.[12]

Ludwig's angina is widely known as bull's neck. That is because the infection spreads superiorly and posteriorly, causing the floor of the mouth to elevate along with the tongue. Inferiorly, the hyoid bone constricts the process, which then leads to swelling that spreads to the anterior aspect of the neck, causing distortion and a "bull neck" appearance.[18] In relation to this, it can be proven that this infection spreads through facial space.

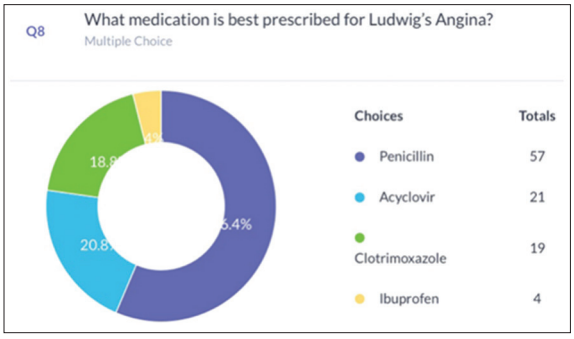
Line of treatment for this infection is airway management. That would be the initial step in



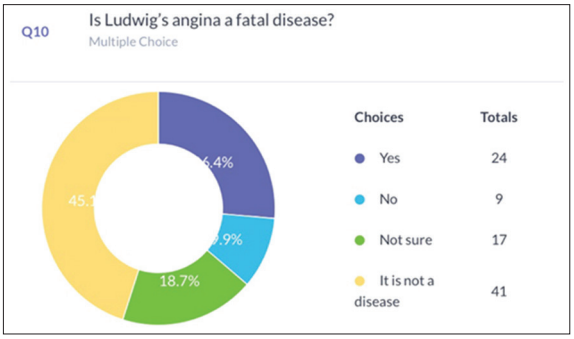
Graph 7: Treatment of Ludwig's angina



Graph 9: Derivation of Ludwig's angina



Graph 8: Prescription for Ludwig's angina



Graph 10: Fatality of Ludwig's angina

treating Ludwig's Angina. Subsequently, penicillin can be given to subside the infection. However, if the infection progresses, then cricothyroidotomy can be done. The treatment plan for every patient ought to be individualized and dependent on various variables. The phase of the ailment and comorbid conditions at the season of presentation, doctor understanding, accessible assets, and workforce are for the most part pivotal factors in the choice making.[11-15]

Quick association of the analgesic and otolaryngology group is critical. In the event that surgery is important, at that point aviation route control ends up required. Aviation route perception strategy is suitable in chosen instances of lesser seriousness. It involves forceful restorative treatment and close perception, checking, and ordinary examination.[10] Adaptable nasotracheal intubation requires aptitudes and experience, in the event that it is not practical, cricothyrotomy, and tracheostomy under nearby analgesic might be required, and this is once in a while performed in the crisis division in those with cutting edge phase of the infection. Tracheostomy and cricothyrotomy can, in such cases, be related with challenges and complications.[9] Endotracheal intubation is related with high rate of disappointment with intense weakening in respiratory status bringing about crisis "cut" tracheostomy. Elective conscious tracheostomy is a more secure and progressively consistent strategy for aviation route the executives in patients with a completely built up Ludwig's angina.[16-18]

CONCLUSION

The questionnaire that was put up was meant to assess the knowledge and awareness of undergraduates about Ludwig's angina. In a nutshell, the students have a fair understanding of what Ludwig's angina is about and are able to differentiate facts from wonder. The study has shown that the students can orient themselves around this infection in terms of theory and practical. Even though Ludwig's angina is not as common as it was before, it is refreshing to know that the understanding of this infection has not been taken for granted. Early recognition of the disease should be of the utmost importance as it can cause fatality.

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