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MANAGEMENT OF LUDWIGS ANGINA THROUGH SURGICAL DECOMPRESSION

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ABSTRACT

Ludwig's angina is a form of severe diffuse cellulitis that presents as acute onset and spreads rapidly, bilaterally affecting the submandibular, sublingual, and submental spaces resulting in a state of emergency. Early diagnosis and immediate treatment planning could be a life-saving procedure. Here, we report a case of Ludwig's angina treated successfully by surgical decompression under antibiotic coverage.

keywords: Ludwig's angina, Submandibular space, Incision and Drainage.

INTRODUCTION

Ludwig's angina is diffuse cellulitis of the submandibular, sublingual, and submental space, characterized by its propensity to spread rapidly to the surrounding tissues.[1]

The word Angina was derived from the Latin word *angere* which means to strangle. Ludwig's angina was coined by a German physician, Wilhelm Friedrich von Ludwig, who first described this condition in 1836 as a rapidly and frequently fatal progressive gangrenous cellulitis and oedema of the soft tissues of the neck and floor of the mouth.[2]

synonyms for Ludwig angina include angina Ludovici, cynanche, carbuculus gangraenosus, Morbus strangulatorius and angina maligna.[3]Ludwig's angina is a potentially lethal infection with a mortality of 8%.

Ludwig's angina is usually preceded by odontogenic infections, a penetrating injury in the floorof the mouth,otitis media, osteomyelitis or fracture of the jaw, tongue piercing sialadenitis, or sialolithiasis of the submandibular glands.[4]

It is a potentially life-threatening infection that needs early intervention and management. Relevant complications include airway obstruction, carotid arterialsheath rupture or abscess, pericardial effusion, osteomyelitis, subphrenic abscess,aspiration pneumonia,
thrombophlebitis of the internal jugular vein, mediastinitis, empyema, necrotizing fasciitis, and pleural effusion.[4]

Here, we report a case of a younger individual with Ludwig's angina.

CASE PRESENTATION

An 18-year-old female patient came to the department with a chief complaint of inability to open mouth, difficulty in swallowing, pain and swelling concerning lower jaw and neck for three days. The patient revealed a history of pain and swelling in the lower back tooth region right side three days back. She applied herbal cream over the area for pain relief then the swelling increased. Past medical, dental and family histories are normal.

On extraoral examination, she had respiratory distress and monitoring of vitals are done immediately. Temperature was100 °F with a pulse rate of 78 per minute, blood pressure of 120/90 mm Hg, and a respiratory rate of 22 breaths per minute were noted.

Swelling is present in the lower third of the face measuring8 × 5 cm extending from the right angle of the mandible to the left angle of the mandible with bilateral involvement of the sublingual and submandibular spaces.

The overlying skin appeared reddish, stretched, and shiny. While palpating, there was a localized rise in temperature. The patient had difficulty in breathing and restricted mouth-opening, with an inter incisor gap of 1 cm.(Figure.1a,b,c)

Figure 1.a Figure 1.b Figure 1.c

Figure-1(a,b,c) showing Extra oral photographs

Intraoral examination revealed vestibular swelling in the region of 46,47 (grossly decayed tooth)with pus discharge from the gingival sulcus. Orthopantamograph shows grossly decayed teeth 46, 47, and 27.(Figure.2)

Figure-2 OPG showing decayed tooth 46,47 and 27.

The diagnosis of Ludwig's angina was made based on the history and clinical examination. The patient was scheduled for emergency drainage of the abscess with the extraction of 46,47 decayed teeth(Figure 3.a,b,c) followed by intravenous injections of cefixime twice a day, metronidazole 100 mg thrice a day, and intramuscular injection of diclofenac 75 mg once a day for 5 days. Pus was taken and sent for culture sensitivity and recalled on the next day for surgical treatment.

Figure 3.a

Figure 3.b

Figure 3.c

Figure-3 a,b,c showing incision and drainage

Figure 4.a

Figure 4.b

Figure-4a,b, showing post operative photographs

DISCUSSION

Ludwig's angina was first named by the German physician, Wilhelm Friedrich von Ludwig who first described this condition in 1836. Angina Malignaand "MorbusStrangularis" are the other names for ludwigs angina.

The word "*angina*" comes from the Greek word *ankhon*, meaning "strangling", so in this case, Ludwig's angina refers to the feeling of strangling, not the feeling of chest pain, chest pain in Ludwig's angina develops when infection enters into retrosternal space.[7]

The microbiology of Ludwig's angina is polymicrobial and includes many gram-positive and negative aerobic/anaerobic organisms, but commonly isolated are *streptococcal spp, staphylococcus aureus, prevotella spp* and *porphyromonas spp*.[8]

About 80% of cases of Ludwig's angina are odontogenic in aetiology, primarily resulting from infections of the second and third molars. Predisposing factors include intravenous drug use, diabetes mellitus, systemic lupus erythematosus, acute glomerulonephritis aplastic anaemia,neutropenia, dermatomyositis, alcoholism, malnutrition, a compromised immune system, organ transplantation, and trauma.[9]

In our case, the etiological factor for Ludwig's angina is an odontogenic infection of the first and second molars. The signs of Ludwig's angina are bilateral involvement of lower facial swelling, pain, and erythema around the lower jaw and upper neck. This is because the infection has spread to involve the submandibular, sublingual, and submental spaces of the face.

Swelling in these areas can often push the floor of the mouth including the tongue upward and backwards further compromising the airway. Intraorally, there will be an elevation of the tongue, woody, brawny induration of the floor of the mouth and anterior neck with bilateral submandibular oedema.[10]
Our case showed similar signs and symptoms.

Asphyxia is caused by expanding oedema of soft tissues of the neck. Other symptoms include dysphagia, dysphonia, anxiousness, agitation, earache, drooling of saliva, malaise, fever, tiredness, confusion, and fetid breath. There may also be varying degrees of trismus, hoarseness, stridor, respiratory distress, decreased air movement, andcyanosis.[11]

Up to 65% of patients with Ludwig's angina require surgical drainage if there was a development of suppurative complications. Other complications of Ludwig's angina include life-threatening airway narrowing or obstruction, cavernous sinus thrombosis, brain abscess, carotid sheath infection, arterial rupture, pericardial and/or pleural effusion, osteomyelitis of the mandible, subphrenic abscess, septic shock, suppurative thrombophlebitis of the internal jugular vein, mediastinitis, empyema, lung abscess, and aspiration pneumonia.[12]

By combining the physical exam findings, a clinical history, CT imaging, and possibly a Gram stain of aspirated fluid from the site, a timely diagnosis can be made so that appropriate treatment can begin before serious complications occur.

The principles that guide the management of Ludwig's angina are Airway management, Early and aggressive antibiotic therapy, Surgical incision and drainage and adequate nutrition and hydration support.

The first step in the treatment of Ludwig's angina is airway management as airway obstruction is the leading cause of death. Recognized techniques include routine incision and drainage, oro-tracheal intubation and fibre-optic nasotracheal intubation. Aggressive airway management is done by securing the airway with endotracheal intubation or surgically by tracheostomy.[13]

Early antibiotic therapy is of paramount importance for successful treatment. Choice of Antibiotics coverage initially from broad-spectrum and cover Gram-positive, Gram-negative and anaerobic organisms. Penicillin group is recommended choice of antibiotics. High doses of penicillin G are initial antibiotics, sometimes used in combination with metronidazole.[3]

TABLE 1: MANAGEMENT OF LUDWIG'S ANGINA

s.no	Name of the drug	Dose
1	Benzylpenicillin	1.2 gm IV every 6 hours
2	Metronidazole	Flagyl 100 mg IV thrice daily for 5 days
3	Patients allergic to penicillin-clindamycin hydrochloride	Cleocin HCl 450 mg IV every 8 hours
4	Amoxicillin-clavulanate	Augmentin 1.2 gm IV BID twice daily for 5days
5	Dexamethasone sodium Phosphate	(Decadron) 8–12 mg IV initially then of 4–8 mg every 6 hours given for 48 hours
6	Gentamicin	40 mg IV twice daily for 5 days
7	Voveran	75 mg once daily intramuscular
8	Cefoxitin sodium	Cefoxil
9	Ticarcillin-clavulanate	Timentin
10	Piperacillin-tazobactam	Zosyn

Emergency cricothyroidotomy or tracheostomy is indicated in patients seen in the last stages of the disease. Surgical management is required for those who are unresponsive to antibiotics and medical management and develop an abscess. It is done by decompression of spaces by external incision and drainage.

CONCLUSION

Early recognition and management are of critical importance in treating Ludwig's angina. Aggressive airway management, appropriate use of antibiotics and surgical management are essential to prevent severe morbidity that can be associated with this condition.

REFERENCES

1. Candamourty R, Venkatachalam S, Babu M, Kumar G: Ludwig's angina–an emergency: a case report with literature review. J Nat Sci Biol Med. 2012, 3:206-208.

2. Campos MA, Junior Portal ML, Gomes CA, do Amaral KP, Almeida DC. Ludwig's angina after severe thrombocytopenic purpura associated with dengue fever. Rev Soc Bras Med Trop 2014 Jan-Feb;47(1):116-118.

3. Wadhawan R, Luthra K, Gajjar D, Solanki G. Insight to Ludwig'sangina: a review. Int J Adv Case Rep 2014 Aug;1(2):78-82.

4. Balasubramanian S, Elavenil P, Shanmugasundaram S, Himarani J, Krishnakumar Raja V: Ludwig's angina: a case report and review of management. SRM J Res Dent Sci. 2014, 5:211–214.

5. Lemonick DM: Ludwig's angina: diagnosis and treatment. Hospital Physician. 2002, 38:31–37.

6. Kavarodi A: Necrotizing fasciitis in association with Ludwig's angina – a case report. Saudi Dent J. 2011, 23:157–60.

7.Dhingra, PL; Dhingra, Shruti (2010) [1992]. Nasim, Shabina, ed.Diseases of Ear, Nose and Throat. Dhingra, Deeksha (5 ed.). NewDelhi: Elsevier. pp. 277–278. ISBN 978-81-312-2364-2.

8. Rowe, Ollapallil. "Does surgical decompression in Ludwig's anginadecrease hospital length of stay?". ANZ J Surg. Retrieved 2013-01-31.

9.Barakate MS, Jensen MJ, Hemli JM, Graham AR. Ludwig'sangina, report of a case and review of management issues.Ann Otol Rhinol Laryngol 2001 Jun;110(5 Pt 1):453-456.

10. Kamala KA, Sankethguddad S, Sujith SG. Ludwig's Angina: Emergency Treatment. J Health Sci Res. 2017;8(1):46-8.

11. Chou YK, Lee CY, Chao HH. An upper airway obstructionemergency. Ludwig angina. Pediatr Emerg Care 2007Dec;23(12):892-896.

12. Chueng K, Clinkard DJ, Enepekides D, Peerbaye Y, Lin VYW.An unusual presentation of Ludwig's angina complicated bycervical necrotizing fasciitis: a case report and review of theliterature. Case Rep Otolaryngol 2012 Jun;(2012), Article ID
931350:4 pages.

13. Hasan W, Leonard D, Russell J. Ludwig's angina – a controversialsurgical emergency: how we do it. Int J Otolaryngol2011 Apr;2011(231816):1-4.