ORIGINAL RESEARCH PAPER

ENT

Volume - 7 | Issue - 3 | March - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

LUDWIG'S ANGINA, TREATMENT PROTOCOL AND OBSERVATION AT A TERTIARY CARE HOPITAL. A CASE SERIES

KEYWORDS: Ludwig's angina, submandibular space, cellulitis, stridor.

Dr.P.VITHAL PRASAD
ASST PROF of ENT, ASRAM MEDICAL COLLEGE, ELURU, ANDHRA PRADESH, 534004.

Dr. C.P.Das
Prof & head of the dept ENT, ASRAM MEDICAL COLLEGE.

Dr.Deeganta mohanty
prof of ENT, ASRAM MEDICAL COLLEGE.

Dr.Manas Ranjan Rout
Asso prof, ASRAM MEDICAL COLLEGE.

Dr.E.Vara Prasanna
Resident , Dept of ENT, ASRAM MEDICAL COLLEGE.

ABSTRACT

Objectives: To study the presentation, progress of patients presenting with Ludwig's angina in a tertiary care hospital. To assess the current treatment protocols for management of Ludwig's angina and associated complications.

Methods: A retrospective study of patients who were admitted in the dept of ENT, ASRAM medical college, for management of Ludwig's angina between 2013 june and 2016 june .

Results: Total of 15 patients included in the study. All cases were managed with broad spectrum systemic antibiotics, incision and draingage, anti inflammatory and anlgesics. Elective tracheostomy was to be done in 2 cases. There was one mortality because of very late presentaion with uncontrolled diabetes.

Conclusion: Improved imaging modalities, borad spectrum new systemic antibiotics, improved sugical skills and clinical experience are the key factors behind a successful outcome in case of Ludwig's angina. Serial closed airway examination is the key to avoid tracheostomy and related morbodity.

INTRODUCTION: Ludwig's angina is a potentially life threatening, rapidly progressive cellulitis of submandibular space with a threat of rapid airway obstruction. Angina is from a greek word, Anchone, meaning strangulation. Ludwig's angina was first described by Wilhelm friedrich von ludwig in 1836 as a rapidly progressive, gangrenous cellulitis and edema of floor of mouth and soft tissues of neck. It arises from submandibular space and spreads by continuity rather than lymphatics. During the pre antibiotic era, mortality rate used to be very high, air way compromise being the prime cause of death. After the introduction of broad spectrum antibiotics , improved orodental hygiene and aggressive surgical approaches, mortality rate have reduced significantly. Proper diagnosis, close airway managemnt, systemic antibiotics and timely surgical intervention are esential for sucessful management of patients with Ludwig's angina. In this paper we would like to highlight retrospective analysis of our treatment protocol in our institute.

METHODS: From june 2013 to june 2016, there were, totally 15 cases got admitted in our hospital with Ludwig's angina. Age of the patients varying from 18 years to 65 years, average age being 48 years. All cases were treated with borad spectrum systemic antibiotics, analgesics and all cases underwent incision and drainage. Only two cases underwent emergency tracheostomy.

OBSERVATION: Age of the patient ranged from 18 years to 65 years, average age being around 48 years, Males 6(40%) and females 9(60%). 6 (40%)patients are known diabetics with poor control of diabetes. One patient is with chronic kidney disease, under regular treatment. All patients are having dental caries with poor oral hygiene. There was no history of trauma in any case. Two cases had severe, diffuse neck swelling with stridor at presentation. All patients were subjected for routine blood investigations and radiological investigations like x ray neck, AP and Lateral views, X ray chest. 12 patients were treated with broad spectrum systemic antibiotics, like amoxycillin and clavulanic acid, amikacin and metronidazole. 3 cases were treated with piperacillin with tazobactam. All cases were treated with Hydrocortisone stat and trypsin chymotrypsin, analgesics, iv fluids. All cases underwent incision and drainage. In 10cases, frank pus was drained out and sent for culture and sensitivity. In 5 cases, it is only blood and serous fluid oozing out of congested tissues.

RESULTS: 14 cases were treated successfully with our treatment protocol without any complications and only one patient succumbed because of uncontrolled diabetes and septicemia despite emergency tracheostomy. Average duration of hospital stay was 14 days ranging from 10days to 25 days. 6 cases needed secondary suturing. All patients were closely monitored with serial close airway assessment.

DISCUSSION: Ludwig's angina is named after German physician Wilhelm friedrich von ludwig who first described this condition in 1836 as a rapidly progressive, gangrenous cellulitis and edema of floor of mouth and soft tissues of neck (Ref no.8). Synonyms for Ludwig's angina are Cynanche, Carbunculus ganrenosum, Morbus strangulatorius and Angina maligna. It is rapidly spreading, potentially life threatening cellulitis or connective tissue infection of the floor of the mouth and neck charecterized by progressive submandibular swelling with elevation and posterior displacement of the toungue.

To understand the pathophysiology it is necessary to know the anatomy of submandibular space. It is divided into two spaces, submaxillary space below and sublingual space above by mylohyoid muscle. These two are communicating posteriorly with one another by mylohoid cleft. Submandibuar space is bounded superiorly by oral mucosa and tongue, superolaterally by mandible, inferiorly by superficial layer of deep cervical fascia and inferomedially by hyoid bone. Since the mandible and deep cervical fsacia offer resistance to spread of infection, the tongue is pushed posterosuperiorly compromising the airway.

Commonest cause is dental infection accounting for 75-85% of cases. Caries involving the anterior tooth and first molar involve more of sublingual space because of atachment of tooth is above the mylohyoid line. 2nd and 3rd molar roots are attached below the mylohoid line, close to the medial surface of mandible causing submaxillary space involvement more. Other etiological factors are

Volume - 7 | Issue - 3 | March - 2017 | ISSN - 2249-555X | IF : 3.919 | IC Value : 79.96

Penetrating injuries of floor of mouth and mandibular fractures, oral lacerations, osteomylitis, oral neoplasms, submandibular sialadenitis, systemic illness such as, diabetes mellitus, malnutrition, alcoholism, immunodeficience and organ transplantaion. In our series, 6 out of 15 patients(40%) are diabetics.

The commonest bacterial isolates are mostly alpha hemolytic streptococci followed by staphylococcus. Anaerobes like, peptococcus, peptostreptococcus, fusobacterium and bacteroids are also isolated. The combination of aerobic and anaerobic organisms has a synergistic effect due to the production of endotoxins like collagenase, hyluronidase and proteases which contribute to the rapid spread of cellulitis.

Clinical features are diffuse neck swelling, neck pain, fever, difficulty in swallowing and drooling of saliva and breathlessness. On examination these patients have tachycardia, fever, variable degrees of respiratory obstruction and drooling. Submandibular and submental areas are tense, swollen and tender. The floor of the mouth is congested and edematous pushing the tongue backwards. Fluctuation of neck is not present usually. Grodinsky in 1934, proposed 4 criteria, to distinguish Ludwig's angina from other deep neck abscesses. The infection must 1) occur bilaterally in more than one space, 2) produce serosanguinous infiltration with or without pus, 3) involve connective tissue, fascia and muscles but not glandular structures, 4) spread by continuity not by lymphatics.

Diagnosis is usually based on clinical features. Early detailed imaging is essential to evaluate the extension of infection or tissue necrosis. Ultrasoud neck is the primary imaging modality for early evaluation of patient. Availability, cost effectiveness, less radiation risk and accuracy in differentiating cellulitis related edema from abscess collection makes it a reliable primary imaging modality. CT scan and MRI are invaluable in predicting and assessing compliactions. X ray is used to rule out mediastinitis, pleural or lung pathology. Complications of Ludwig's angina include sepsis, pneumonia, asphyxia, empyema, pericarditis, mediastinitis and pneumothorax.

The treatment of Ludwig's angina has 4 principles. First sufficient airway management is essential. Insertion of oral airway prevents the tongue falling back compromising the airway. Patient can't tolerate it for a long period. Adult with respiratory rate more than 25, spo2 less than 95% on room air and noisy breathing are indications for emergency airway intervention , either endotracheal intubation or tracheostomy. Close monitoring of airway hourly in an ICU set up is very important.

Second is early and aggressive injectable broad specturm antibiotic therapy. Drug of choice is usually Amoxyclav with Metronidazole. Severe cases, Piperacillin tazobactam or Clindamycin can be administered. Intravenous dexamethasone, 8 mg every 6 hours for 48 hours, reduces edema and cellulitis which helps in maintaining airway patent and improves antibiotic penetration to the area.

Third is incision and drainage of abscess. Wide decompression of the supra hyoid region, through a horizontal incision 3-4 finger breadth parallel to mandible. Mylohyoid muscle is split in midline and drainage established both medially and laterally. Pus is very rarely encountered during this procedure and starts to drain 2-3 days after procedure. Finally adequate nutrition and hydration support improves recovery. Patint must be maintained in a sitting position, and should never be left unattended. The source of infection should be determined and treated appropriately.

Tschiassny et al described attachments of roots of 2nd and 3rd lower molars below the mylohyoid line and close to inner cortex of mandible leading to submaxillary space involvement and attachment of roots of other lower tooth above the line and close to outer cortex of mandible, sublingual space involvement more. Larawin et al (Ref no 1) in their study of deep neck space infections, retrospectively reported that off the 103 cases studied, ludwings angina is the most common infection constituting 38(37%) cases. Kurien et al, (Ref no 2)reported a 13 year review of patients with Ludwig's angina, 41 patients, 24% are children and 76% adults. 70% of children cured with conservative management only without surgical intervention while 81% of adults required incision and drainage. Tracheostomy was necessary in 10% of children and 52% of adults. Mortality rate was 10% in both groups. In our series of 15 cases, all cases underwent incision and drainage, 10(66.6%) cases frank pus drained out and 5(33.3%) cases only serous fluid with blood encountered. Incision and drainage reduces the edema by letting out the pus or serosanguinous fluid, thus reduces pressure on airway. Even though there is no pus, it reduces tissue edema and patient gets good relief than patients without incision and drainage. So we perform incision and drainage in all cases as a protocol to reduce pressure in upper airway and to reduce complications related to airway compromise. Two cases underwent tracheostomy (13.3%) and one patient(6.6%) died because of uncontrolled diabetes mellitus, septicemia and late presentation. Average duration of hospital stay was 14 days, ranging from 10days to 25 days. 6 cases(40%) required secondary suturing of incision. There was no incidence of thoracic compli cations in our series.

CONCLUSION: Despite improved outcomes, Ludwig's angina still remains a potentially life threatening disease. With early diagnosis, close airway observation and management, aggressive intravenous antibiotc treatment and necessary timely sugical intervention, we can reduce the morbidity and mortality. Incision and drainage in all cases improves recovery, reduces complications and airway compromise.

REFERENCES:

1. V. Larawin, J Naipo, S.P. Dubey, et al, "Head and neck spaceinfections", oto laryngology-head and neck surgery, vol 135, no 6, pp 889-893, 2006
2. M.Kurien, J. Mathew, A. Job and N. Zachariah, "Ludwig's angina," clinical otolaryngology and applied sciences. Vol 22, no 3, pp 263-265, 1997
3. S.L.Greeenberg, J. Huang, R.S.Chang, and S.N. Ananda, "Surgical management of Ludwig's angina" ANZ journal of surgery.vol 77, no 7, pp 540-543, 2007.
4. W.Miller, I. Furst, and G.Sandor," A retrospective blinded comparision of clinical examination and computerized tomography in deep neck infections," Laryngoscope, vol 109, no 11, pp1873-1879, 1999.
5. F.B.Quinn jr, 'Ludwig's angina" Archives of otlaryngology- head and neck surgery, vol 125, p 599, 1999
6. F.Viera, S.M.Allen, R.M.Stocks, and J.Thompson, "Deep neck infections" , Otolaryngologic clinics of north america, vol 41, pp 459-483, 2008
7. A.Bansal, J.Miskoff, and R.J.Lis, "otolaryngologic critical care", critical care care clinics, vol 19, pp 55-72, 2003.
8. W.F.Von ludwig, "uber eine in neuerer Zeit weiderholt hier vorgekommene form von halsentzundung. Midicinisches correspondenzblatt des wurttembergischen arztlichen vereins" stuttgart, vol 6, pp 21-25, 1836
9. Tschiassny K. Ludwig's angina, an anatomic study of the role of the lower molar teeth in its pathogenesis, arch otlaryngol 1943.