

*Case Report***A Rare Case of Pregnancy with Ludwig's Angina**Alka B. Patil<sup>1</sup>, Lavanya Anuranjani<sup>2</sup><sup>1</sup>Prof. & HOD, <sup>2</sup>Resident;

Dept. of Obstetrics &amp; Gynaecology, ACPM Medical College &amp; Hospital, Dhule, Maharashtra (India).

Corresponding Author: Alka B. Patil

*Received: 25/02/2014**Revised: 22/03/2014**Accepted: 24/03/2014***ABSTRACT**

**Background:** Ludwig's angina in pregnancy is a rare entity. This odontogenic infection spreads to the submandibular, sublingual and submental spaces. It can be life threatening because of septicaemia & asphyxia. Pregnancy is a state of low immunity and thus risk of infection is high or going worse, once infected. The adaptive immune responses are weakened during pregnancy & thus Ludwig's angina in pregnancy requires special attention.

**Objective:** Management of a rare case of pregnancy associated with Ludwig's angina.

**Method:** An unregistered case of 30year, G2P1L1 at 32weeks gestation with Ludwig's angina.

A detailed history regarding pregnancy & complaints was taken. There was chronic toothache since 4months which was diagnosed as Ludwig's angina. Antenatal care was given along with dental care & antibiotic coverage. Considering the chances of preterm delivery antenatal steroids were given. Patient underwent Incision & Drainage to relieve symptoms.

**Result:** Patient went into spontaneous preterm labour, secondary to infection which was not arrested by tocolytic agents. Patient had preterm vaginal delivery of 1.8kg, female baby, baby kept in NICU for 3days. Patient did not have puerperal sepsis. The patient & baby were stable at the time of discharge.

**Conclusion:** Pregnancy with Ludwig's angina is a rare, life threatening condition requiring early aggressive therapy with antibiotics, incision and drainage and protection of the airway. Periodontal infection like this may lead to preterm delivery. Good hygiene along with periodontal assessment should be a one of the component of obstetric care.

**Keywords:** Pregnancy, Ludwig's Angina, Periodontal diseases

**INTRODUCTION**

Ludwig's Angina eponym after Wilhelm Friedrich von Ludwig, who first described the condition in 1836. Although traditionally associated with pain of cardiac origin, the term "angina" is derived from the Latin word for choke (angere) and the Greek word for strangle (ankhone).<sup>[1]</sup>

Ludwig's angina is a potentially life threatening diffuse cellulitis involving floor of mouth & submandibular regions bilaterally and causing progressive airway obstruction. It is nearly always fatal facial space infection. Ludwig's Angina can arise from various sources such as odontogenic infection or complicated cases of

submandibular gland sialadenitis, sialolithiasis, tongue base lymphangioma and tongue piercing. [2]

Grodinsky developed criteria for the diagnosis of Ludwig's angina. There must be cellulitis, not an abscess, of the submandibular space that never involves only one space and usually is bilateral; produces gangrene with serosanguinous, putrid infiltration but very little frank pus; involves connective tissue, fascia, and muscles but not glandular structures; and is spread by continuity and not by lymphatics. [1]

Kathleen Moorhead from Michigan, USA; in 2010 mentioned that after extensive literature search, she retrieved 2 cases of Ludwig's Angina in pregnancy. Additionally she reported her own case on Ludwig's Angina. Here we are reporting a very rare case of Ludwig's Angina with pregnancy, managed successfully in A.C.P.M. Medical College, Dhule (India) in intensive obstetric care unit. [3]

## CASE REPORT

30 year old, unregistered patient, Gravida 2 Para 1 at 32 weeks gestation with previous FTND, 3 years back

□ c/o left sided throbbing toothache since 4 months

□ swelling over left jaw which extended from chin to hyoid region.

□ Dysphagia & fever.

She was under treatment from a local doctor for toothache. Further management was done at Dental Institute, where she was diagnosed to have Ludwig's angina & was referred to us for consultation about obstetric management.



PRE-OPERATIVE:- FRONT VIEW

Figure 1



Figure 2: Pre-operative Submental View

### On examination

□ Temperature: febrile (100 F), pulse: 98bpm, Blood pressure: 100/60, Respiratory Rate: 22/min, O<sub>2</sub> saturation on room air 97%, pallor++.

□ Local examination: 7x4cm diffuse swelling involving the left mandibular region along with B/L submandibular region extending till hyoid region. Swelling was erythematous, tense, tender & local temperature was raised.

□ Other findings included dysphagia, trismus +, poor dental hygiene with carries teeth, oedematous floor of mouth on left side, tenderness ++.

□ P/A: uterus 32weeks size, relaxed, longitudinal lie with cephalic presentation, FHS 130bps & regular.

□ P/Sp: cervix & vagina healthy.

□ P/V: Os closed, no effacement.

□ USG: A single live intrauterine 32 weeks gestation in longitudinal lie, cephalic presentation with adequate liquor.

□ Pathology reports: Hb: 8.2gm%, WBC: 16000, neutrophils: 96, ESR: 106, Blood Group: O+ve

□ urine routine, RBS, BUN, Sr. Creatinine, Sr. Bilirubin, SGOT, SGPT, BT/CT, Platelet count, Prothrombin Time were within normal limits. HIV, HBsAg were nonreactive.

□ Management:

- Incision & Drainage (I&D) under general anaesthesia was done to relieve symptoms. 15ml serosanguinous discharge drained via bilateral submandibular & submental incision. A rubber corrugated drain was kept.



Figure 3: Incision & Drainage

- Culture & sensitivity report: staphylococcus aureus infection with amoxicillin- clavulanate sensitivity
- Antibiotic coverage along with IV fluids & 2 blood transfusions were given. Throughout the therapy; fetal monitoring was done & was reassuring.



Figure 4: Placement of Drains

Considering the chances of preterm delivery; antenatal steroids were given (12mg betamethasone, 2 doses, 12hrs apart). Daily dressing & irrigation of the wound was done.

□ Postoperative period was uneventful. Her general condition improved, swelling decreased, floor of mouth was lowered and mouth opening improved.

- On the 2nd post-operative day she had spontaneous preterm labour which was not arrested by tocolytic agents.

□ Preterm vaginal delivery of 1.8kg, female baby. Baby cried immediately after birth & was kept in NICU for 3 days under observation.

All investigations of baby were within normal limits except CRP which became negative after 72hrs.

Baby was given prophylactically antibiotics in view of Ludwig's angina in mother & was discharged on 7th day of birth.

Blood cultures of baby were negative.

- On postdelivery day 2, I & D of the left submasseteric abscess along with surgical removal of the offending teeth under General Anaesthesia was done. 30ml pus was drained & the culture was sterile.

- No puerperial sepsis found in patient & the puerperial period was uneventful.
- Intravenous amoxicillin- clavulanate combination 1.2g BD, metronidazole 500mg TDS, along with anti-inflammatory medications & IV fluids was given for a week
- The drains were removed after decreased secretions.
- The patient was discharged on 15th day with a healthy baby. Subsequent follow ups were uneventful.



POST-OPERATIVE

Figure 5

## DISCUSSION

When medical & surgical treatments for pregnant women are considered, both the physiologic changes of pregnancy & the perinatal effects of the treatment must be considered. Pregnancy is accompanied by many physiological changes which place the mother at a higher risk of infection or of doing worse once infected. First, the immune response is greatly diminished during pregnancy, thus resulting in potential faster progression of an infection. In addition, there is decreased neutrophil chemotaxis, cell mediated immunity & natural killer cell activity. Approximately 50% of pregnant women complain of dyspnea by 19 weeks gestation and there is

some depletion in the oxygen reserve of the gravid patient. This results in lower oxygen reserve which could increase fetal hypoxia during periods of hypoventilation. <sup>[4]</sup>

The pregnant patient with a maxillofacial infection requires special attention given the physiologic changes of pregnancy, which puts the patients at increased risk of complications. Such changes include increased sodium retention, dilutional anaemia, decreased colloid pressure, and an upper airway that is affected by capillary engorgement and subsequent oedema of the nasal passages, larynx, oropharynx, and trachea. Chronic gingivitis, friable oral mucosa, and mild immunosuppression of pregnancy play an important role in outcome. Further, changes in gastrointestinal motility and other physiologic systems put the pregnant patient at increased risk of acute respiratory distress syndrome, pneumonia, sepsis, amniotic fluid embolism, disseminated intravascular coagulation, and pulmonary oedema secondary to aspiration. Adverse pregnancy outcomes such as preterm birth, low birth weight, fetal growth restriction, preeclampsia, and perinatal mortality are associated with periodontal disease. <sup>[3]</sup>

From an oral perspective, as pregnancy associated hormonal changes begin to affect a woman's body; the gingival tissues are affected as well. They become much more sensitive and thus susceptible to irritation from soft plaque. Because a pregnant patient has increased demands on her organs, there is increased potential for poor oxygenation. On the other hand, poor oxygenation is compromising to the fetus. An infection in itself can at times infect the placenta, uterus & possibly the fetus, causing fetal septicaemia. Treatments such as prolonged intubation & certain intravenous medications can also harm the fetus. During a life threatening infectious situation such as the one described, the risk

of maternal & fetal morbidity may overshadow potential teratogenic side effects. In order to prevent a similar life-threatening emergency, health care providers should not neglect even minimal complaint of dental pain.<sup>[4]</sup>

The microbiology of Ludwig's Angina is polymicrobial & includes many gram-positive & negative aerobic/anaerobic organisms, but commonly isolated are streptococcal spp, staphylococcus aureus, prevotella spp & porphyromonas spp.<sup>[2]</sup> Antibiotics that are acceptable include penicillin, amoxicillin & clindamycin. Some authors also recommend the association of gentamycin. Recent case reports advocated the use of intravenous steroids which potentially avoided the need for airway management.<sup>[5]</sup>

Ludwig's angina is a known, yet a rare surgical emergency that is potentially life threatening unless early recognised and aggressively treated.<sup>[6]</sup> Treatment invariably consists of

1. Securing the airway where necessary
2. Aggressive broad-spectrum antimicrobial therapy
3. Surgical decompression of the facial planes with removal of source of infection.<sup>[2]</sup>

The majority of Ludwig's angina occurs in patients with no comorbid disease. However, predisposing factors include: dental carries, recent dental treatment, systemic illnesses such as diabetes mellitus, malnutrition, alcoholism, compromised immune system such as AIDS, and organ transplantation and trauma.<sup>[7]</sup>

The symptoms of Ludwig's angina vary depending on the patient and the degree of infection. Many general symptoms, such as pyrexia, weakness, and fatigue, develop as the result of the immune response associated with bacterial infection. The inflammatory response leads to edema of the neck and tissues of the submandibular,

submaxillary, and sublingual spaces. Significant oedema may cause trismus and an inability to swallow saliva.<sup>[1]</sup>

Airway compromise is always synonymous with the term Ludwig's angina. It is responsible for spread of infection to retropharyngeal space & parapharyngeal space communicating with superior mediastinum. Laryngeal oedema causes airway obstruction leading to death. Therefore, airway management is the primary therapeutic concern. The stage of the disease and comorbid conditions at the time of presentation, physician experience, available resources, and personnel are all crucial factors in the decision making. Immediate involvement of an anaesthetist and an otolaryngology team is crucial. Blind nasotracheal intubation should not be attempted in patients with Ludwig's angina given the potential for bleeding and abscess rupture. Flexible nasotracheal intubation requires skill and experience, if not feasible, cricothyrotomy and tracheostomy under local anaesthesia are occasionally performed in the emergency department in those with advanced stages of the disease. Elective awake tracheostomy is a safer and more logical method of airway management in patients with a fully developed Ludwig's angina.<sup>[5]</sup>

#### ***Analysis of our case***

Dental caries was the co-morbid condition associated with our patient presenting with Ludwig's Angina. Incidence of preterm labour is high in presence of infection. Tocolytics & antenatal Betamethasone were given to patient to salvage pregnancy. Prompt antibiotics for this polymicrobial infection & timely drainage led to good perinatal outcome & prevented maternal morbidity & mortality of this dreaded infection.

## CONCLUSION

Ludwig's Angina is a rare case & focus of infection. Its invasive nature & altered physiology during pregnancy causes severe life threatening complications which require early recognition & aggressive therapy with antibiotics. Maintenance of good dental hygiene during antenatal period with periodontal assessment should be component of obstetric care so that chances of progression to Ludwig's Angina can be curtailed.

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