

Extensive Necrotising Fasciitis as a serious complication in late management of Ludwig's Angina: A 3 case Series & Management Strategies.

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Abstract: Ludwig's Angina is a serious, potentially life-threatening infection of the floor of the mouth & the neck. It is notorious for its aggressiveness & rapid progression and occasionally serious complications. Though other complications have been regularly highlighted in the literature, necrotizing fasciitis as a complication of Ludwig's Angina is reported infrequently. Three cases presenting with Necrotizing Fasciitis as a complication of Ludwig's Angina are presented herewith. First Case is a 55 male patient who developed extensive necrotising fasciitis and pharyngocutaneous fistula and needed skin grafting. Second case is a 1 year old male who developed sepsis like features and required debridement under general Anaesthesia. Third case is an Out Patient who refused treatment and left against medical advice.

Keywords: ludwigs angina; necrotising fasciitis; pharyngocutaneous fistula; neck space infection; skin grafting

I. Introduction

Ludwig's Angina is a serious, potentially life-threatening infection of the floor of the mouth & the neck. It was first described and named after by Wilhelm Frederick von Ludwig in 1836. It is notorious for its aggressiveness & rapid progression and occasionally serious complications. Though other complications have been regularly highlighted in the literature, necrotizing fasciitis as a complication of Ludwig's Angina is reported infrequently. Three cases presenting with Necrotizing Fasciitis as a complication of Ludwig's Angina are presented herewith.

First Case

The first case reported is a 55 years old Male Patient who was referred to OPD from lower centre. He presented with a 14 days history of swelling and pus in the chin and neck area, generalized weakness and inability to eat or drink. The patient presented with poor general condition with a toxic look in Septic Shock. Vitals were unstable with a Blood pressure of 70 mm Hg systolic reading and a feeble pulse of 105 bpm. There was extensive necrosis and loss of the skin over the lower face, the neck and anterior chest wall extending upto the upper part of his abdomen. On work up complete haemogram showed mild polymorphocytic leucocytosis. His blood sugar levels were within normal range both in fasting and post prandial. He was screened negative for HbsAg HCVAb and HIVAb and the LFT, KFT were not deranged. The Pus Culture Sensitivity showed *Staphylococcus aureus* sensitive to Piperacillin Tazobactam, Gentamycin, Azithromycin and resistant to Ampicillin. Amoxicillin & Cefuroxime.

Management started with resuscitation from shock which included multiple compatible cross matched blood transfusions. Pus culture sensitivity report based parenteral antibiotic coverage was given. Supportive nutritional care (amino acids, albumin transfusion) was added to revive the general condition of the patient. A pharyngo-cutaneous fistula developed and was noticed during subsequent dressing. Incision and drainage was done for the collection of pus in the upper abdomen. Meticulous debridement and daily dressing with Papain enzyme cream and surgical debridement was done to ensure quick granulation. Ryles tube was inserted and patient was kept nil per oral. He required a plastic surgery referral and partial thickness split skin grafting over the bare area when infection was controlled. Patient made an uneventful recovery and was discharged after 3 months.

Second Case:

A 1 year old male child presented with a progressively increasing swelling in neck for 4 days. The child was running a high fever and refused to feed. On presentation the child has a poor general condition with marked pallor and tachycardia 210 bpm with irritability. On examination there was a necrotized abscess/lesion in submandibular region. On Investigation hemoglobin was mere 2.8 g/dl on presentation TLC: 22.5 X

103/cumm Polymorph predominant, ESR 50 mm 1st hour, Total protein: 4g/dl (A:G::1:1). Management included resuscitation from shock (including multiple compatible cross-matched packed cell transfusion), parenteral antibiotic coverage and daily dressing and debridement done. The child required a wound debridement ↓General Anesthesia when his general condition stabilized and later required a Split Skin Partial Thickness Skin Grafting for covering the raw areas. He made an uneventful recovery thereafter.

Third Case:

A middle aged lady presented to the out-patient department with a gradually progressive swelling below her chin for the last one week. She complained of trismus and dysphagia and pain. On examination there was a tense swelling in her submental and submandibular region which was seen bulging toward the floor of the mouth and the skin over the swelling had necrosed and developing necrotizing fasciitis. We explained her the gravity of the situation and advised treatment with the need for admission. The patient refused to get admitted and left against medical advice

II. Discussion

Ludwig's angina is a diffuse inflammation of the submandibular and sublingual spaces a life threatening disease but fortunately rare. The condition develops almost always as a complication of the dental infection. The causative bacteria include many Gram-negative, anaerobic organisms, *Streptococci* and *Staphylococci*. Diabetes, neutropenia, alcoholism, Aplastic anemia, glomerulonephritis, dermatomyositis and SLE are the major risk factors in decreasing order of frequency. The potential for rapid respiratory obstruction is the greatest concern. Awareness and recognition of the possibility of Ludwig's angina is the first and most essential step in the diagnosis and management of this serious condition.

The 4 cardinal signs of Ludwig's angina are [1]

1. Bilateral involvement of more than a single deep tissue space.
2. Gangrene with serosanguinous, putrid infiltration but little or no frank pus.
3. Involvement of connective tissue, fasciae, and muscles but not glandular structures.
4. Spread via fascial space continuity rather than by the lymphatic system.

Its serious complications include sepsis, necrotising fasciitis, mediastinitis, pleural empyema, pericarditis, pericardial tamponade. The morbidity and mortality rises sharply when such complication develops. The condition has to be differentiated from angioneurotic edema, cellulitis, lingual carcinoma, lymphadenitis, peritonsillar abscess, salivary gland abscess, sublingual hematoma. Treatment options consists of ensuring and maintaining adequate ventilation with tracheostomy if required. Broad spectrum antibiotic therapy is indicated and possibly should be based on the pus culture sensitivity reports. Surgical drainage of the source of infection is a must and it is better to give a wide incision and also in cases when there is no fluctuation on examination. Furthermore the treatment should also be directed towards source of infection. When necrotizing fasciitis develops adequate debridement, regular dressing, broad spectrum antibiotics, fluid management and operative procedure to cover the raw area is required.

III. Conclusion

Necrotizing fasciitis in the head and neck region developing as a complication of Ludwig's Angina is a serious and life threatening condition. Prompt identification and proper management of the condition is warranted to prevent serious morbidity and mortality.

Compliance with Ethical Standards:

(In case of Funding) Funding: The study is not funded by any agency or individual

Ethical approval:

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

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Pic 1 a: 1st case showing the extent

Pic 1 b: 1st case showing the pharyngocutaneous fistula

Pic 1 c: Post Skin Grafting



Pic 2a Showing the Extent
Pic 2 b Showing the debridement under Ga
Pic 2 c showing presentation



Pic 3a & b showing the extent of the third reported case