October/2019

सत्यमेव जयते
Department of Health Research
Ministry of Health and Family Welfare, Government of India

INDIAN COUNCIL OF MEDICAL RESEARCH
Serving the nation since 1911

Standard Treatment Workflow (STW) for the Management of

NECK SPACE INFECTION

ICD-10-J36, J39.0, K 12.2, J39.1

Rapidly progressive bacterial infections which spread along facial planes and spaces of head and neck region. They may be fatal unless emergently treated. Most of these infections are secondary to dental infection.

CLINICAL SCENARIOS

They usually present as
- Ludwig's angina (submandibular space infection)
- Peritonsillar abscess
- Parapharyngeal abscess
- Retropharyngeal abscess

The typical presentation is with acute onset of pain and swelling in the neck with fever, malaise, trismus and dysphagia.

Extension along spaces to involve multiple deep neck spaces is frequent and may extend to parotid space, masticator space, temporal space, visceral vascular (carotid) space.

Cervical space infection may spread inferiorly to the anterior mediastinum and posteriorly along prevertebral space.

Tubercular cold abscess involves the same anatomical spaces but would not display inflammatory signs or rapid progression.

SYSTEMIC ASSESSMENT

Screen for diabetes mellitus, HIV infection, agranulocytosis and immunosuppressive therapy or chemotherapy.
Signs of inflammation may be less marked and disease course may be more rapidly progressive in immunocompromised patients.

CLINICAL EXAMINATION

- Airway assessment to rule out stridor or respiratory compromise
- Look for signs of dehydration
- Monitor temperature, heart rate, respiratory rate, BP, and signs of sepsis/ septic shock.
- Oral cavity examination to check jaw opening, condition of teeth and floor of mouth
- Oropharyngeal examination to check for inflammed medially displaced tonsil & uvula and bulge in lateral pharyngeal wall
- Palpation of neck for lymph nodes, cellulitis, abscess or subcutaneous crepitus
- Cranial nerve examination to rule out lower cranial nerve palsies

RED FLAGS FOR REFERRAL TO DISTRICT HOSPITAL

- Breathing difficulty
- Trismus
- Torticollis/ neck stiffness
- Subcutaneous crepitus and skin discolouration or blisters suggest necrotizing fibrofascitis.
- Toxaemia
- Lower cranial nerve palsy
- Facial puffiness suggestive of venous thrombosis
- Mediastinal extension

INVESTIGATIONS

ESSENTIAL INVESTIGATIONS

1. **Contrast enhanced CT scan** of head and neck is the standard in evaluation of neck space infections. If CT Scan facility is not available, following should be done:-
   a. **Lateral x-ray neck:** Prevertebral soft tissue thickening >7 mm at the level of C2 or > 2/3rd of the width of the vertebral body at C6 is highly suggestive of retropharyngeal abscess. It may also demonstrate foreign bodies, subcutaneous air, air fluid levels and erosion of vertebrae.
   b. **Ultrasound neck** can suggest abscess and guide aspiration attempts.
2. **Blood:** Total and differential leukocyte count, blood sugar, urea
3. **Abscess Cultures with Gram stain** to direct antimicrobial therapy. Anaerobic culture, when available.

MANAGEMENT

PHC/PRIMARY LEVEL

1. Cautiously assess the airway. If found compromised, do endotracheal intubation/ consider tracheotomy
2. Immediately gain an IV access for hydration, broad spectrum antibiotics and pain killers.
3. Transfer the patient to hospital with facility for surgical drainage

DISTRICT HOSPITAL

1. **Hospitalization:** As an emergency for close watch and intensive management.
2. **Airway management:** In progressive disease, in view of impending airway compromise, consider securing the airway early. During acute respiratory difficulty, tracheostomy should be done if intubation is difficult
3. **Correction of fluid and electrolyte imbalance**
4. **Antibiotics:** Early and aggressive IV antibiotic therapy with a combination of Crystalline Penicillin, Aminoglycoside and Metronidazole or Clindamycin is preferred.
5. **Incision and drainage:** Peritonsillar abscess is drained intraorally. All other abscesses are drained via an external approach

INDICATIONS FOR I&D

- Necrotizing fibrofascitis
- Abscess formation
- No response to antibiotics over 48-72 hours
- Deterioration despite antibiotics over 24 hours
- Airway compromise or impending airway compromise
- Mediastinal spread
- Vascular complication like venous thrombosis

QUALITY ASSESSMENT PARAMETERS

Complete resolution of infection and follow up to ensure no recurrence; treatment of initial cause of infection in tooth or tonsil.

FOLLOW UP SERVICES

Consider cold tonsillectomy for patients with history of multiple episodes of tonsillar abscess

ABBREVIATIONS

CT – Computerized tomography

MRI – Magnetic resonance imaging

REFERENCES

1. *Smith II JL, Hsu JM, Chang J (2006) Predicting deep neck space abscess using computed tomography. Am J Otolaryngol 27: 244-247.*
2. *Mayor GP, Millán JMS, Martínez VA (2001) Is conservative treatment of deep neck space infections appropriate? Head And Neck 23: 126-133.*
3. *Bottin R, Marioni G, Rinaldi R, Boninsegna M, Salvadori L, et al. (2003) Deep neck infection: A present day complication. A retrospective review of 83 cases. Eur Arch Otorhinolaryngol 260: 576-579.*