Patient information

- 68y/o
- Male
- Admission date:94.6.27

C.C

- R’t neck mass for 1 week with odynophagia and high fever

P.I

- R’t neck mass gradually increase in size with odynophagia and high fever for 1 week.
- LMD with oral medication,in vain→ENT OPD
- PE of ENT:R’t huge neck mass with rigid neck,nasopharynx symmetric,eardrum intact.

PI

- CT:R’t neck lymph node abscess R/o deep neck infection.
- Suggested to receive surgical intervention while medical Tx seems to be of little benefit.
- Op arranged on 94.6.29

Past histroy

- Medical hx:HTN(+).DM(+)
- Surgical hx:nil

Lab data

- WBC:13570
- Hb:11.9　Hct:35.7%
- MCV:66.0
- Neu:80.4%
- Glucose:229
- Got:63　GPT:44
- CRP:14.20

CT

- 病情摘要：
  A159C:BENIGN NEOPLASM OF MAJOR SALIVARY GLANDS
  682:OTHER CELLULITIS AND ABSCESS
  Imaging findings：
  right neck mass for days severe pain + tender+
  local heat -right neck mass for days r/o deep neck infection
  Head and neck CT without IV contrast enhancement show:

- Note confluent suppurative enlarged nadal mass with irregular thick rim-enhancement and surrounding inflammatory change at the Rt jugular chain.
  There is an irregularly shaped area of decreased attenuation in the retropharyngeal region

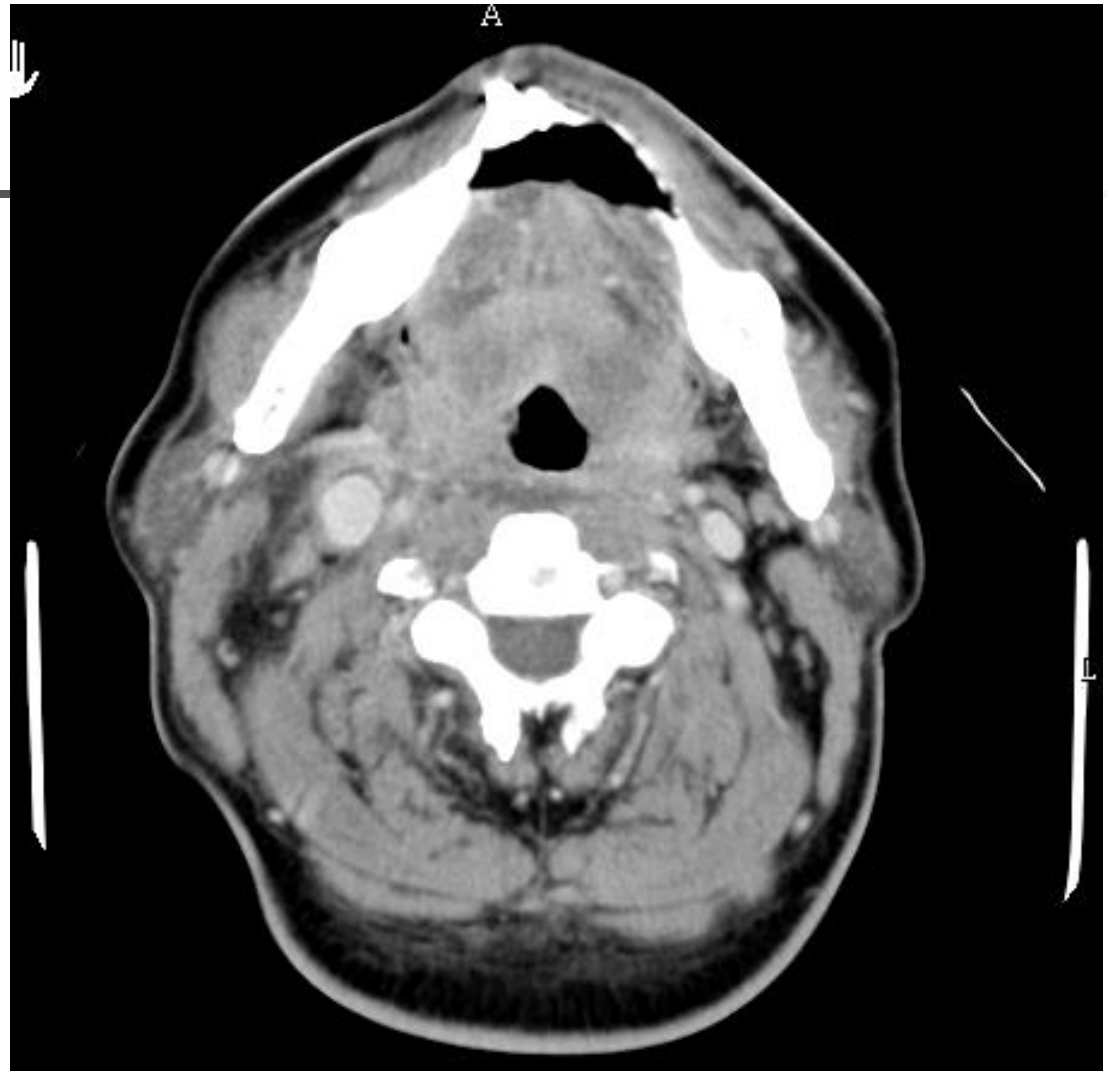
- without a definable rim of contrast enhancement consistent with phlegmon which possible
extending to the danger space. No abnormal calcification present. Otherwise, the nasopharynx and larynx show normal boundaries and normal wall thickness.

The oral floor muscles are normally developed and bilaterally symmetrical. Imaged portions of the parotid and submandibular glands show no abnormalities.

Impression：

Feature is consistent with deep neck infection with suppurative lymph nodes.


R
L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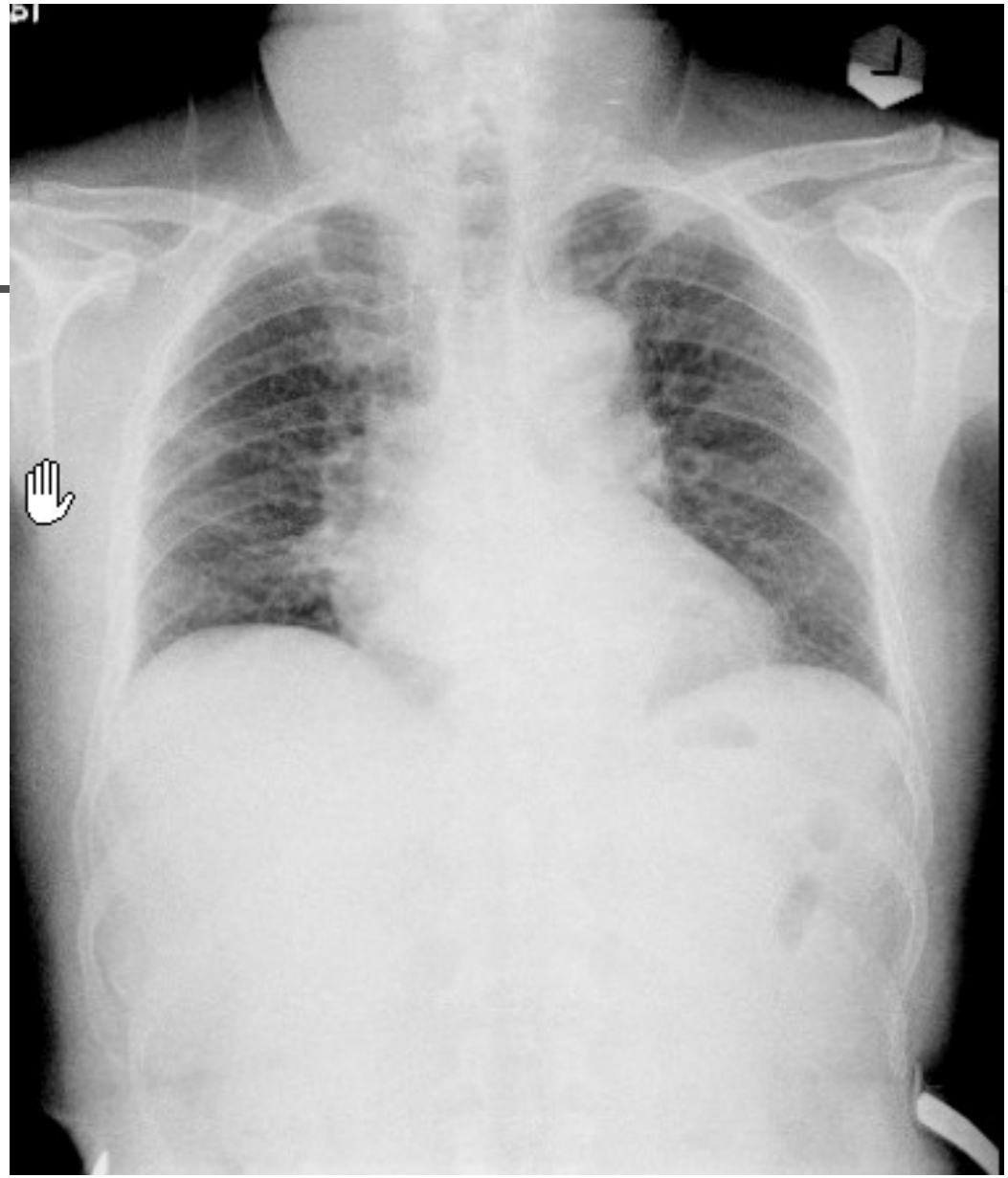
Chest PA

- 682.1:OTHER CELLULITIS AND ABSCESS, NECK
  Imaging findings：
  Poor inspiration with inadequate expansion of lungs, Chest film shows exaggerated lung markings of bilateral lower lung parenchymae. Heart and diaphragms are normal. The bony thoracic cage is normal in appearance. Tortuous aortic knob with intimal calcification, indicating ASHD.



Differential Diagnosis

Differential Diagnosis

- Branchial cleft remnants
- Lipoma
- Parotid tumor
- Neck,cevical metastasis
- Cervical adenopathy
- Deep neck infection

branchial cleft cysts

- pathophysiology –controversial
- incomplete involution of the branchial apparatus
- ectopic epithelial cells growing along the course of branchial clefts
- benign. Superinfection, mass effect, and surgical complications account for morbidity

CT finding

- Contrast-enhanced CT reveals a well-defined, nonenhancing mass of fluid attenuation in a characteristic location. The location depends on which branchial cleft is affected. Branchial cleft cysts are usually well defined and round.

Location

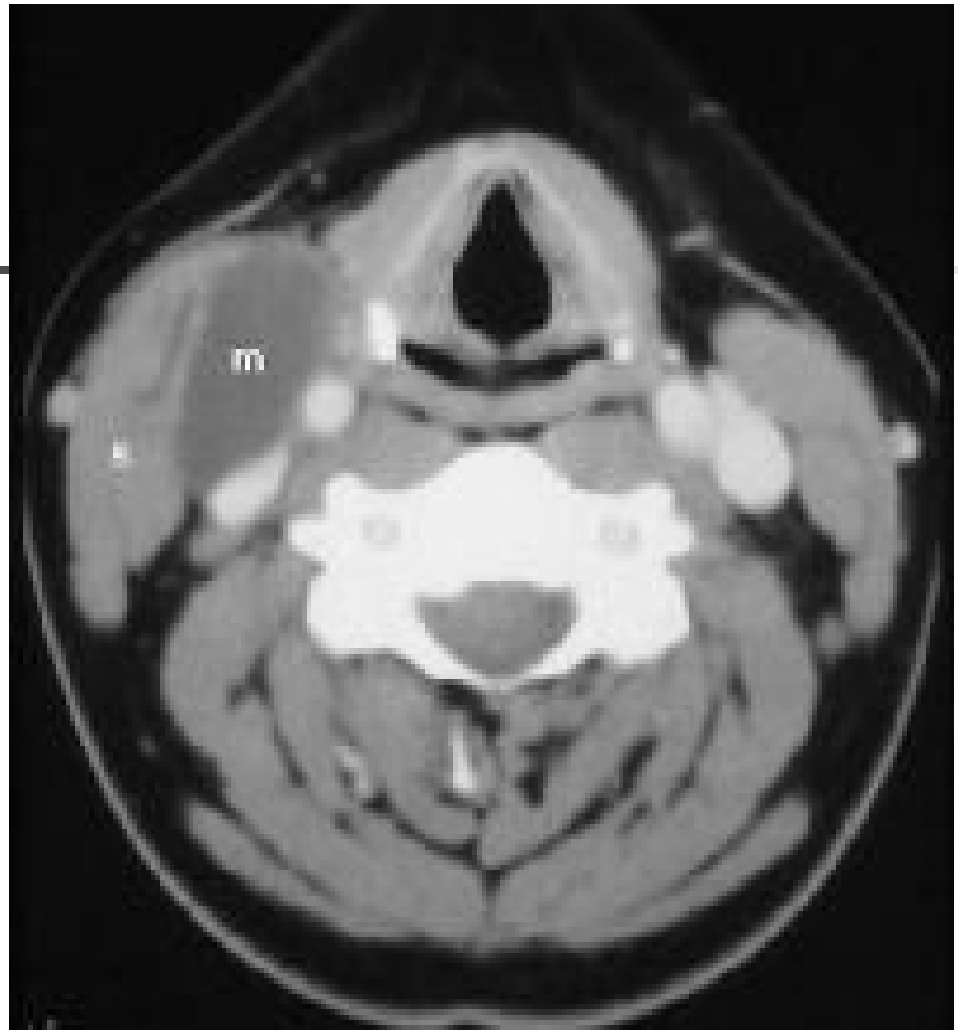
- first branchial cleft cysts -- type I :posterior and inferior to the external auditory canal. Type II : anterior triangle of the neck.
- 2nd—most common.anterior to the upper third of the sternocleidomastoid muscle

Location

- 3rd--beneath or posterior to the sternocleidomastoid muscle, within the posterior triangle of the neck.
- 4^{th}--may be located in the larynx, in the mediastinum, or along the course of the recurrent laryngeal nerve.

Third branchial cleft cysts

- rare . a third branchial fistula courses posterior to the carotid arteries and pierces the thyrohyoid membrane to enter the larynx.
- occur anywhere along that course (eg, inside the larynx), but are characteristically located deep to the sternocleidomastoid muscle


m

Above CT finding

- Contrast-enhanced axial CT at the level of the thyroid cartilage reveals a large, well-defined, nonenhancing, water attenuation mass (m) deep to the right sternocleidomastoid muscle (s), medially displacing the common carotid artery and internal jugular vein.

Lipoma

- benign tumors composed of mature fat cells. most common benign mesenchymal tumor. found in the subcutaneous tissues and, less commonly, in internal organs.
- Lipomas typically develop as discrete rubbery masses in the subcutaneous tissues of the trunk and proximal extremity. They usually are a few centimeters in size and can be removed by surgical excision or liposuction.

PE of lipoma

- subcutaneous nodules of 2-10 cm.
- Lipomas often are lobulated.
- Consistency is rubbery.
- Skin overlying the lesion is normal and is not connected to the tumor.
- Neck, back, and proximal extremities are affected most commonly.
- lipomas are radiolucent

Parotid tumor(plain film)

- sialolithiasis or involvement of the adjacent mandible.
- open-mouth lateral images with an extended chin, posteroanterior images, and bilateral oblique images. Sialography, or the injection of water-soluble contrast material into the Stensen duct, is used to demonstrate ductal anatomy or sialoliths.

CT of parotid tumor

- diffuse glandular calcifications suggest chronic sialadenitis, whereas calcifications within a mass are commonly seen in a pleomorphic adenoma.

CT of parotid tumor

- A solid mass is more easily differentiated from a cystic mass using CT compared to MRI. Although the facial nerve usually is not visualized on CT, the course of the nerve can be traced from the stylomastoid foramen. In addition, the Stensen duct usually is not seen unless it is dilated.

MRI of parotid tumor

- help differentiate benign parotid masses from malignant masses
- A benign lesion usually is marginated smoothly, with a distinct border or capsule.

MRI of pleomorphic adenoma

- T1-weighted images typically demonstrate intermediate signal intensity
- with isointense-to-hyperintense signal on T2-weighted images.
- Contrast enhancement can be homogeneous or heterogeneous.

Neck,cervical metastasis (CT)

- Central necrosis remains the most specific finding suggestive of nodal involvement, but its absence does not exclude metastasis.
- a minimal axial diameter of 11 mm for the submandibular triangle and 10 mm for the rest of the neck

Neck,cervical metastasis (CT)

- Other criteria include the presence of groups of 3 or more borderline nodes and the loss of tissue planes.

MRI

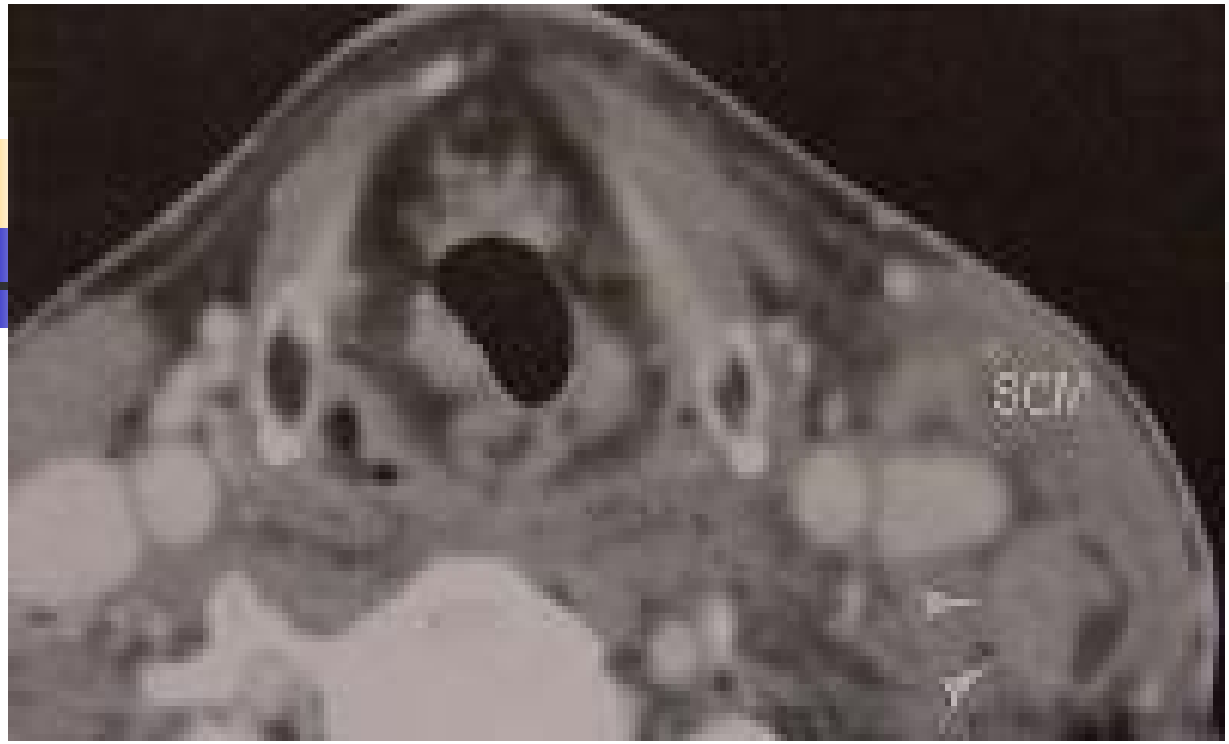
- The sensitivity of MRI exceeds that of clinical palpation in detecting occult cervical lymphadenopathy
- Size, the presence of multiple nodes, and necrosis are criteria shared by CT scanning and MRI imaging protocols.

MRI

- Central necrosis, as evaluated by unenhanced T1- and T2-weighted images
- overall accuracy rate of 86-87% compared with CT scanning, which has an accuracy rate of 91-96%.

Image finding

- the size and presence of noncontrast-enhancing parts inside metastatic lymph nodes caused by tumor necrosis, tumor keratinization, or cystic areas inside the tumor.
- Only rarely does tumoral tissue enhance more than reactive lymph node tissue; in these rare cases, the tumor can be visualized within a reactive lymph node.



Neck cancer, unknown primary site. CT scan of neck with contrast. Metastatic lymphadenopathy (arrows).

Cervical lymphadenopathy

1. Viral upper respiratory infection
2. Infectious mononucleosis
3. Rubella
4. Catscratch disease
5. Streptococcal pharyngitis
6. Acute bacterial lymphadenitis
7. Toxoplasmosis

Cervical lymphadenopathy

- Tuberculosis/atypical mycobacterial infection
- Acute leukemia
- Lymphoma
- Neuroblastoma
- Rhabdomyosarcoma
- Kawasaki disease

Clinical findings

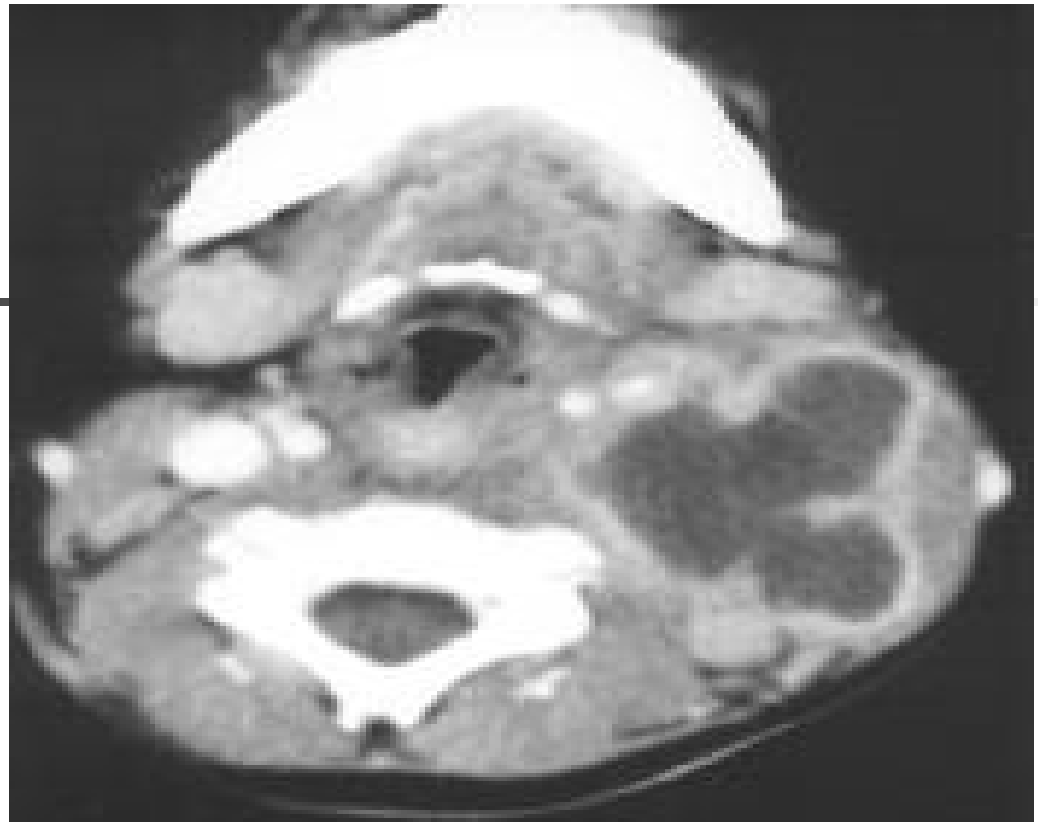
- Cervical nodes drain the tongue, external ear, parotid gland, and deeper structures of the neck, including the larynx, thyroid, and trachea. Inflammation or direct infection of these areas causes subsequent engorgement and hyperplasia of their respective node groups.

Clinical findings

- Adenopathy is most common in cervical nodes in children and usually is related to infectious etiologies. Lymphadenopathy posterior to the sternocleidomastoid typically is a more ominous finding, with a higher risk of serious underlying disease.

CT of deep neck infection

- CT scans with contrast : gold standard in evaluation of deep neck infections
- Abscesses are seen as low-density lesions with rim enhancement, occasional air fluid levels, and loculations
- irregularity of the abscess wall on CT as predictive of pus within the cavity



Lower cut CT scan showing the abscess cavity. The rim enhancement and partial loculation are well demonstrated.

Surgical intervention

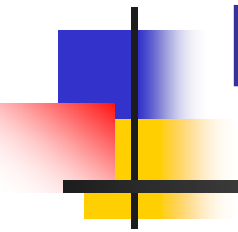
- Op name:R’t circopharyngeal myotomy
- Op finding:after incision through the platysma m. and approach the SCM,a necrotic tissue with effusion
- Pus was drained and cultured
- J-P draon inserted

Pathology

- Diagnosis:R’t deep neck infection,0.8*0.2*0.3cm
- Micro:fragments of fibrotic tissue with infiltration of acute inflammatory cells

Pus culture

- Klebsiella pneumoniae
- Antibiotics: Cleocin +GM ivd
- Narizin



Discussion

Clinical histroy

- Pain
- Recent dental procedures
- Upper respiratory tract infections (URTIs)
- Neck or oral cavity trauma
- Respiratory difficulties
- Dysphagia
- Immunosuppression or immunocompromised status
- Rate of onset
- Duration of symptoms

Symptoms and signs

- Asymmetry of the neck and associated neck masses or lymphadenopathy
- Medial displacement of the lateral pharyngeal wall and tonsil caused by parapharyngeal space involvement
- Torticollis and decreased range of motion of the neck caused by inflammation of the paraspinal muscles

Symptoms and signs

- Fluctuance that may not be palpable because of the deep location and the extensive overlying soft tissue and muscles (eg, SCM)
- Possible neural deficits, particularly of the cranial nerves and Horner syndrome

- Regularly spiking fevers (may suggest internal jugular vein thrombophlebitis and septic embolization)
- Tachypnea and shortness of breath (may suggest pulmonary complications and warn of impending airway obstruction)

Etiology

- Before the widespread use of antibiotics, 70% of deep neck space infections were caused by spread from tonsillar and pharyngeal infections
- Today, tonsillitis most common in children, followed by odontogenic sources. In addition to surgical infections, poor dental hygiene and IV drug use are increasingly common sources of infection in adults.

Cause

- Tonsillar and pharyngeal infections
- Dental infections or abscesses
- Oral surgical procedures or removal of suspension wires
- Salivary gland infection or obstruction
- Trauma to the oral cavity and pharynx
- Instrumentation, particularly from esophagoscopy or bronchoscopy

Cause

- Foreign body aspiration
- Cervical lymphadenitis
- Branchial cleft anomalies
- Thyroglossal duct cysts
- Thyroiditis

Cause

- Mastoiditis with petrous apicitis and Bezold abscess
- Laryngopyocele
- IV drug use
- Necrosis and suppuration of a malignant cervical lymph node or mass
- 20-50% of deep neck infections have no identifiable source

Lab

- Blood chemistries .CBC
- Clotting profile
- Blood cultures (may be indicated in septic patients)
- Abscess cultures with Gram stains (critical to direct antimicrobial therapy)

Image

- Lateral neck radiography
- Mandible series
- Chest radiography
- CT scanning
- MRI
- Ultrasound
- Arteriography

Lateral neck radiography

- soft tissue swelling in the prevertebral region. radiopaque foreign bodies, subcutaneous air, air fluid levels, and erosion of the vertebral bodies.
- Prevertebral soft tissue thickening greater than 7 mm over C2 or > 14 mm in children and> 22 mm in adults over C6 is highly suggestive of a retropharyngeal process.

Mandible series

- dental source of the infection . Panorex can help evaluate the patient for a dental abscess.
- the second and third mandibular molars because the apices of these teeth extend below the mylohyoid line, giving them access to the submandibular space.

Chest radiography

- To evaluate the mediastinum, check for subcutaneous air or pneumomediastinum, displacement of the air stripe, or concurrent pneumonia suggesting aspiration.

CT scanning

- CT scans with contrast are the gold standard . CT scans indicate the location, boundaries, and relation of infection to surrounding neurovascular structures
- Abscesses are seen as low-density lesions with rim enhancement, occasional air fluid levels, and loculations

- the association between irregularity of the abscess wall on CT as predictive of pus within the cavity
- age>18: CT scan with contrast is 95% sensitive and 53% specific for distinguishing a drainable fluid collection.
- CT findings + clinical exam -- sensitivity : 95%, specificity : 80%

Treatment-**Medical therapy**

- Airway
- Cultures
- Volume and metabolic resuscitation
- Intravenous antibiotics

Surgical therapy

- Incision and drainage
- Needle aspiration

complication

- Airway obstruction from compression of the trachea
- Aspiration.
- Vascular complications
- Mediastinitis from inferior spread along fascial lines
- Neurologic deficits
- Septic emboliSeptic shock

- Necrotizing cervical fasciitis
- Osteomyelitis due to local spread to bones of the spine, mandible, or skull base
- Grisel syndrome (ie, inflammatory torticollis causing cervical vertebral subluxation)

Prognosis

- can be expected to fully recover as long as the infection is treated properly and in a timely manner. Patients whose treatment is delayed can expect a greater number of complications and a prolonged course of recovery. Once a deep neck infection has fully resolved, no particular predisposition exists for recurrence.

Risk factor

- Wang et al :females, neck swelling, associated respiratory symptoms
- Huang et al :diabetes and other underlying systemic diseases
- Chen et al :diabetes , more than one deep neck space ,and a longer hospitalization.

Summary

- Streptococcus viridans and Klebsiella pneumoniae were the most common organisms (33.9%, 33.9%) identified through pus cultures. K. pneumoniae was also the most common infective organism (56.1%) in patients with DM.
- mean age of 49.5 +/- 20.5 years.

- 63 patients (34.1%) who had associated systemic diseases, with 88.9% (56/63) having DM
- parapharyngeal space (38.4%) : the most commonly involved. Odontogenic infections and URI were the two most common causes of deep neck infections (53.2% and 30.5% of the known causes)