

RETROPHARYNGEAL SPACE, PREVERTEBRAL SPACE INFECTION AND EPIDURAL ABSCESS: MULTI-IMAGING-MODALITIES- DEMONSTRATION IN A DIABETIC PATIENT.

Wiwattana TANOMKIAT^{1,2}, Patchrin PEKANAN¹,
Teeratorn PULKES³, Suphaneewan JAOVISIAHA¹.

ABSTRACT

A case of pyogenic infection in retropharyngeal and prevertebral space with epidural abscess in a diabetic adult patient was reported. The infectious process began as an acute osteomyelitis of the great toe's phalanges. Plain film, CT scan and MRI studies showed the spread extension nicely in different aspects.

Key words Infection retropharyngeal space, prevertebral space, epidural space, osteomyelitis.

INTRODUCTION

The retropharyngeal space (RPS) and prevertebral space (PVS) are distinct midline spaces of the extracranial head and neck that extend from the skull base to the upper mediastinum and form an integral part of the suprahyoid neck. They are bounded by the middle and deep layers of the deep cervical fascia. Lymph nodes and fat are found in the RPS while muscles, vertebral artery, clivus and cervical vertebrae are found in the suprahyoid PVS (1)(Fig.8). Diseases processes in this space are relatively uncommon. CT and MRI are the primary imaging modalities for the evaluation of the pathology in this space and related structures (2-5). Inflammatory lesions represent a significant portion of PVS pathology and may present as abscess. Etiologies include tuberculous spondylitis and pyogenic vertebral osteomyelitis.

We present a diabetic case with pyogenic retropharyngeal and prevertebral space infection, extending to anterior epidural space, demonstrated by plain film, CT scan and MRI scan.

CASE REPORT

A 54-years old male patient was admitted to Ramathibodi Hospital due to headache for 5 weeks. He was known as a poorly controlled diabetes mellitus case for 10 years. He had low grade fever and headache several days after he stepped on a lighting cigarette which caused him an ulcer with pus at his left foot. His body temperature at the time of admission was 37.8 degree celsius, pulse rate was 120/min. The stiff neck and kernig's sign was positive. White blood cell count was 15,000 cell/mm³ with predominant PMN. Lumbar puncture showed high pressure of 30 mm H₂O, WBC count 13,000, PMN 90%, low sugar and high protein. CSF culture showed no growth.

Plain film of his left foot showed osteolytic area at distal phalanx of the great toe, cortical destruction along the medial part of proximal phalanx of the great toe and focal osteolytic area at metaphysis of proximal phalanx, compatible with acute osteomyelitis (Fig. 1). Plain film of the cervical spine in lateral view showed prevertebral soft tissue lesion extending from C1 to C3 with forward displacement of the

¹Department of Radiology, Ramathibodi Hospital, Rama 6 Street, Bangkok 10400, Thailand.

¹Department of Radiology Songklanakarin Hospital, Hardyai, Songkla, Thailand.

³Department of Medicine, Ramathibodi Hospital.

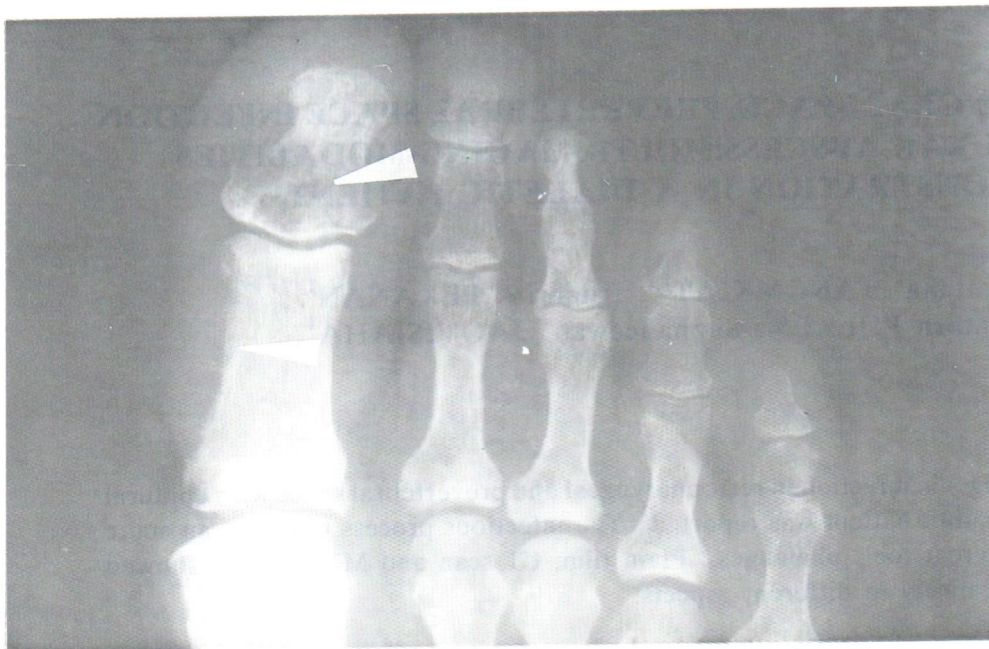


Fig. 1
Plain film, AP view of left foot showed osteomyelitis of distal phalanx and proximal phalanx of the great toe.

compressed nasopharyngeal air way (Fig.2). CT scan of C1-2 level showed osteolytic destruction of the anterior arch of C1(Fig.3) and left inferior clivus (The image is not shown here). T1WI sagittal view of the brain and upper cervical spine showed soft tissue lesion in the anterior central canal of C1-3 and at lower pontine and medullary level. Soft tissue lesion is also shown at retropharyngeal space and prevertebral area. There was a destruction of right part of C1-2 bodies and anterior arch of C1. The cord was compressed and displaced posteriorly(Fig.4). T1WI-sagittal view of the brain and upper cervical spine with Gd-DTPA enhancement showed strongly enhanced lesion at retropharynx, prevertebral area lesion, the region of destruction of C1-2 and partly enhanced lesion in the anterior central canal. Demonstration of the upper cervical cord compression was nicely shown in the post contrast enhancement scan(Fig.5). T2WI-sagittal view of the brain and upper cervical spine showed bright signal in the lesion at retropharyngeal, prevertebral area and in small pre-pontine lesion. Most of the anterior central canal lesion had dark signal similar to the adjacent bone(Fig.6). Demonstrated lesion in T2WI-axial view of C1-2 level was noted in figure 7. Findings were compatible with retropharyngeal and prevertebral space infection with an anterior epidural abscess.

Surgical drainage was performed and pus was found. The smear of the organisms revealed mixed organism (gram positive bacilli and cocci), the aerobic culture was negative.

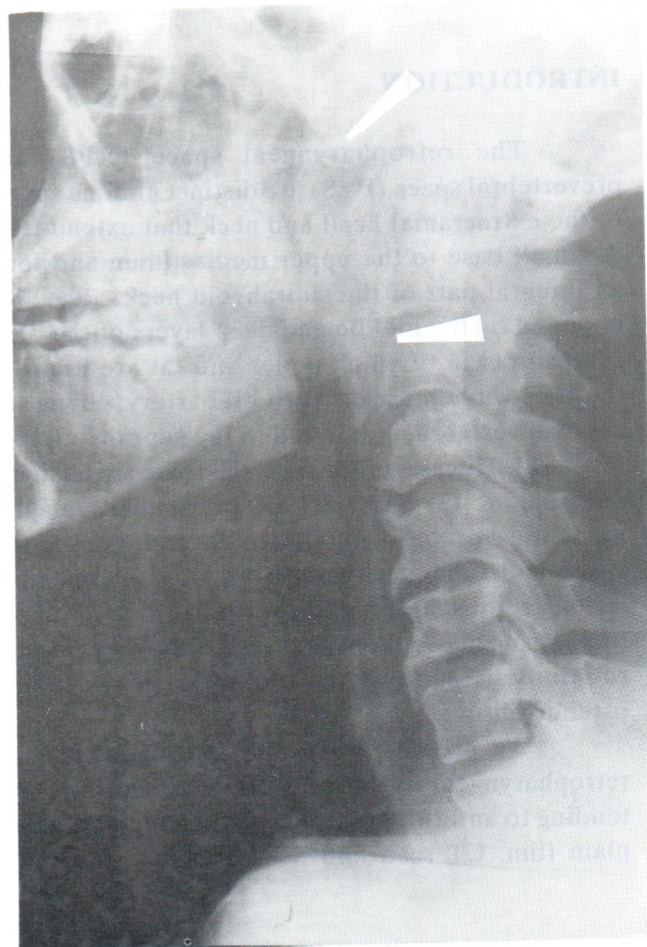


Fig. 2 Plain film of the neck in lateral view showed a prevertebral and retropharyngeal mass lesion.

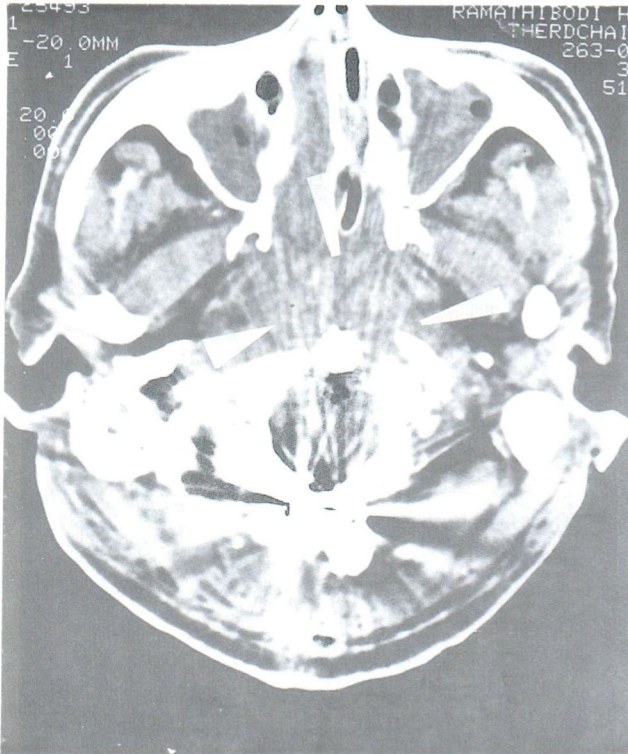


Fig. 3 CT scan at skull base showed osteolytic lesion at left anterior arch of the foramen magnum and prevertebral soft tissue mass. Bilateral maxillary sinusitis was also observed.

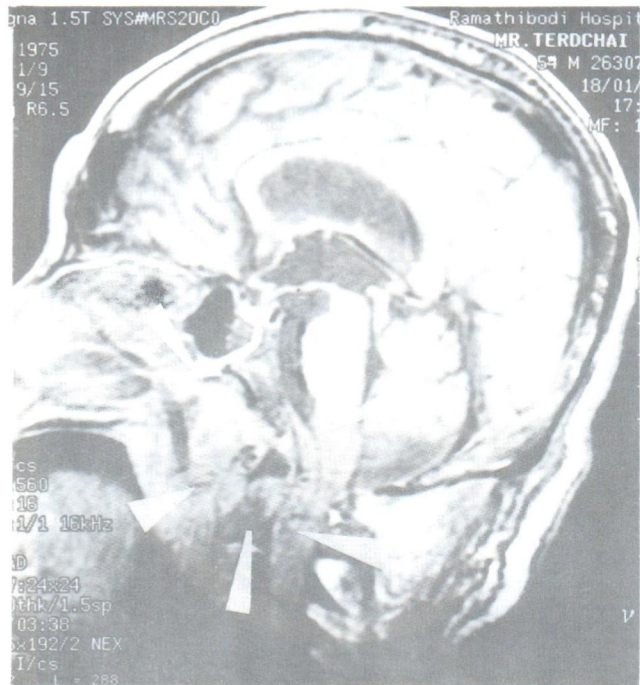


Fig. 4. T1WI sagittal view of the brain and C1-2 region showed isosignal soft tissue lesion at retropharyngeal area, anterior central canal at around the F.Magnum with destruction of odontoid process.

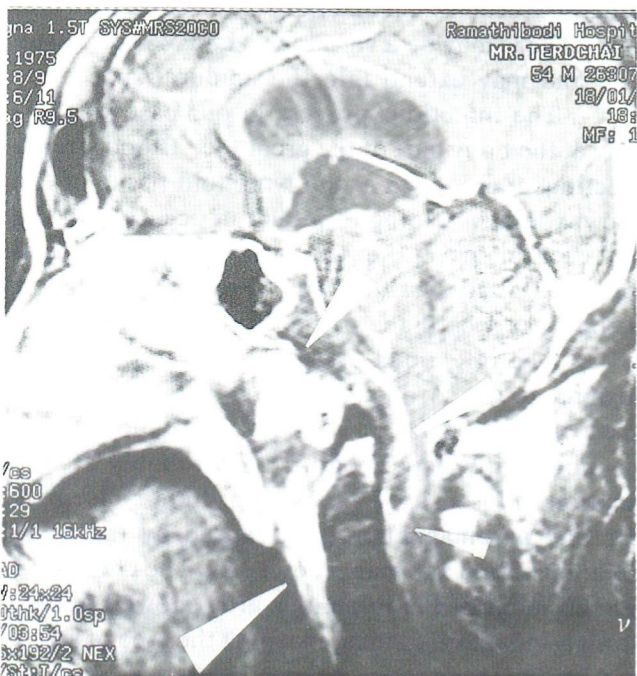


Fig. 5. T1WI sagittal view of the same area as in figure 4, post Gd-DTPA contrast enhancement showed diffuse strongly enhanced lesion except a small part of the anterior spinal canal lesion.

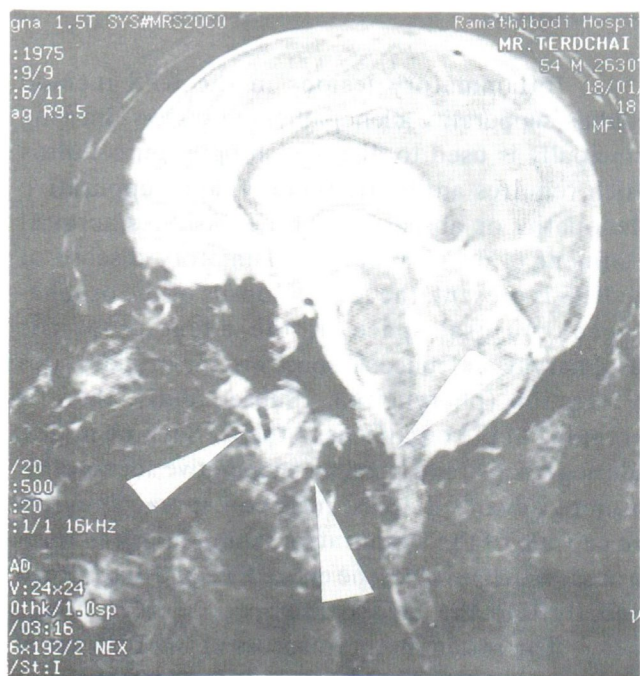


Fig. 6. T2WI sagittal view showed brightness of the infectious lesion except the area of signal drop in the lesion of the anterior central canal

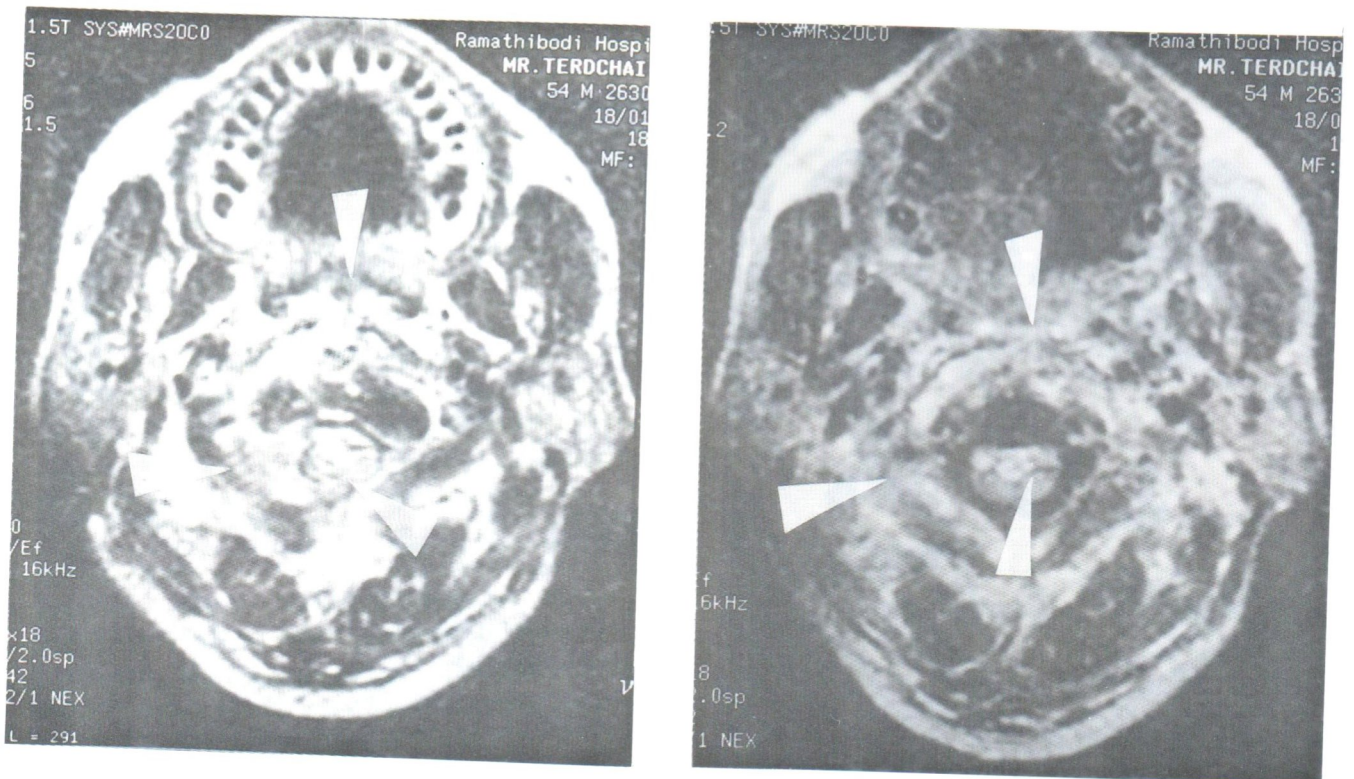


Fig. 7A,B. T2W axial view of the C1-2 level showed a focal destruction of right anterior arch of C2. Other changes were similarly seen as in figure 6.

DISCUSSION

Inflammatory lesions in the RPS include cellulitis, suppurative adenopathy, and abscess. Imaging principally is used to distinguish between cellulitis which requires antibiotic therapy, and suppurative adenopathy or abscess which necessitates surgical treatment (1,6-9). When inflammatory disease of the RPS is present, the faucial tonsils of the oropharyngeal mucosal space or the adenoids of the nasopharyngeal mucosal space are the primary sites of infection (pharyngitis). Subsequently, there is spreading of the organisms to the RPS lymph nodes, inducing reactive and, possibly, suppurative adenopathy. In more advanced cases, infection spreads beyond the capsule of the suppurative lymph nodes to form an abscess that involves the entire RPS and may spread caudally into the mediastinum.

The inflammatory process of the PVS space is centered at the disc space and is associated with

partial destruction of the anterior portion of the vertebral body. There may be a variable-sized PVS soft tissue mass and may extend into the epidural space.

The infectious process in our case was initially at the bony part of the great toe. Blood stream infectious foci lodged at the lymphoid tissue of the pharynx and spreading of infection occurred in the prevertebral space, then cervical osteomyelitis and prevertebral abscess followed. Predisposing factor in this case was diabetes mellitus.

The infectious tissue at RVS and PVS was isosignal to the cord on T1WI, and bright on T2WI. Area of drop signal on T2WI in the epidural pus was not totally understood. It is probably a combination of viscosity, increasing protein concentration and paramagnetic effect caused by the accumulation of iron and manganese.(10). The Gd-DTPA enhancement of the infectious area showed diffuse strongly enhanced lesions, except at the area of signal void epidural abscess.

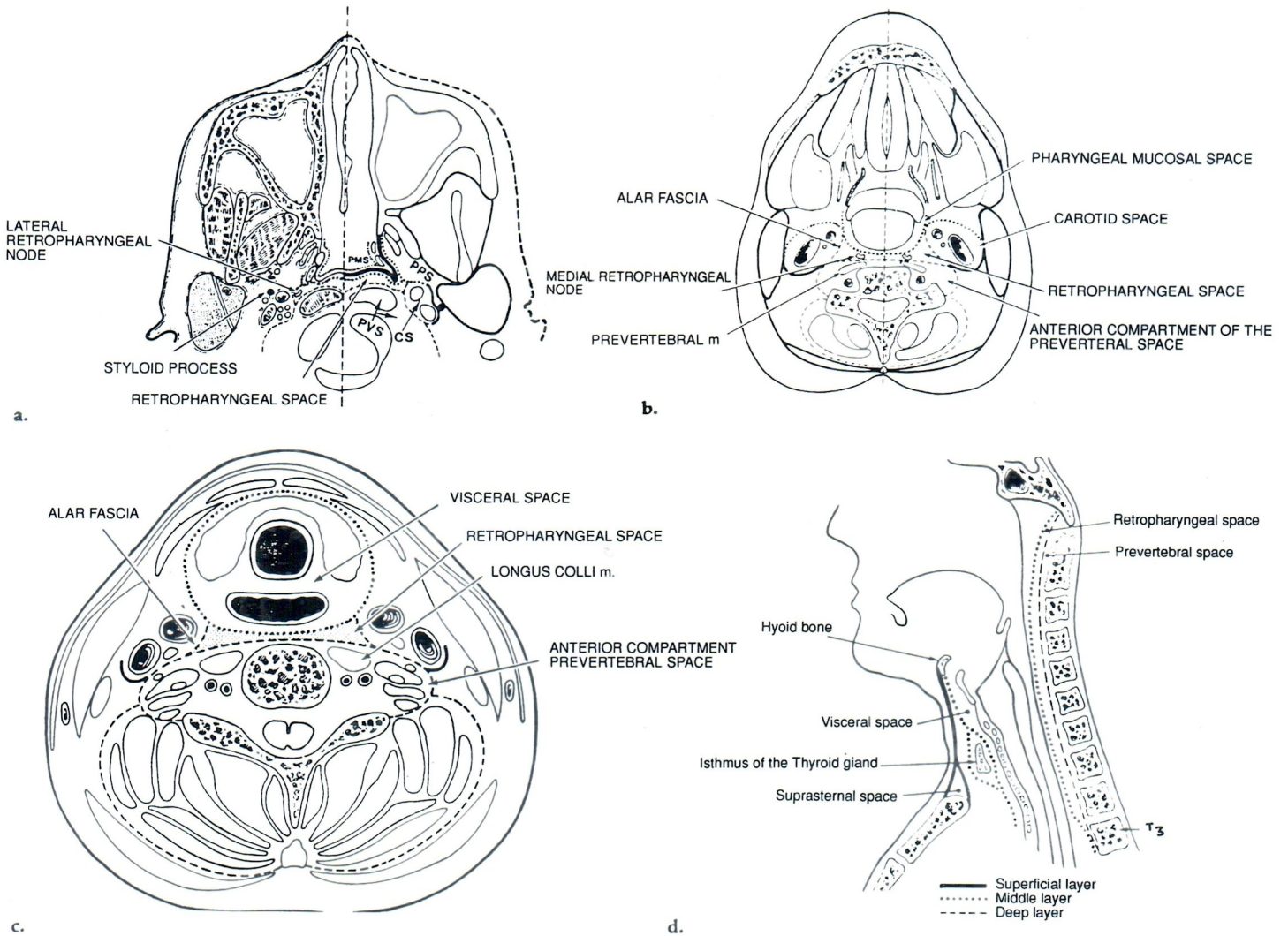


Fig. 8. Drawing of retropharyngeal and prevertebral space.

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