CT demonstration of postanginal sepsis

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Abstract. A case of postanginal sepsis is presented with a brief discussion of the pathogenesis and presentation of the syndrome. CT scanning can effectively delineate the parapharyngeal inflammatory process, extension along fascial planes, internal jugular vein encroachment and thrombus, as well as septic emboli complications.

Septic pulmonary emboli are usually associated with intravenous drug abuse, indwelling venous catheters, right-sided endocarditis, arteriovenous shunts, or pelvic thrombophlebitis in patients with pelvic inflammatory disease. First described in the 1930’s, postanginal sepsis (sepsis following pharyngeal infection), is an important but less well-known cause of septic embolization to the lungs.

We report a case of postanginal sepsis in which computed tomography (CT) provided useful information in confirming the diagnosis and planning appropriate therapy.

CASE REPORT

A 27 year old woman was brought to the emergency room with rigors, diaphoresis, hemoptysis, and fever. She had sought medical attention for a severe sore throat three weeks earlier, but had not taken the prescribed antibiotic since she had experienced temporary improvement. The patient denied intravenous drug abuse or previous serious illness.

Examination revealed an acutely ill, obese woman with a heart rate of 140 per minute, tachypnea (52 per minute), supine blood pressure of 80/40 mm HG, and an oral temperature of 105°F. Initial oropharyngeal examination was reported as normal. Diffuse rales were noted over the left lower lung. Examination of the heart, abdomen, and extremities revealed no murmurs, tenderness, or signs of phlebitis. Chest radiography revealed two small right upper lobe cavities, a left upper lobe infiltrate, and a left lateral pleural based radiodensity. The admitting diagnosis was “septic emboli of unknown source.”

Cultures of the blood and left pleural fluid aspirated under sonographic guidance grew Fusobacterium nucleatum. Repeat ENT examination disclosed discolored, tender, left anterolateral neck mass. CT of the neck revealed a large left parapharyngeal fluid collection deviating the oropharynx to the right and encroaching on the left internal jugular vein. The mass extended from the level of the hyoid bone (Figure 1) to C-7 (Figure 2). Scans of the upper chest demonstrated thin-walled cavities in the right upper lobe and a loculated left pleural effusion (Figure 3).

Immediate surgical drainage of the neck and pleural collections and administration of intravenous antibiotics resulted in rapid improvement, and the patient was discharged from the hospital three weeks following admission.

DISCUSSION

Lemierre offered the classic description of postanginal sepsis in 1936 when he noted “the appearance and repetition several days after the onset of a sore throat . . . of severe pyrexial attacks with an initial rigor, or still more certainly the occurrence of pulmonary infarcts after the initial pharyngitis.” A latency period of up to six weeks from the primary nasopharyngeal infection to presentation with sepsis may occur. The patient, usually an adolescent or young adult, may offer only nonspecific complaints of anterior neck swelling or parotid gland sensitivity.

Postanginal sepsis appears to result from the development of a parapharyngeal abscess with associated internal jugular vein thrombophlebitis. The latter occurs by extension of the inflammation via the pharyngeal and tonsillar venous plexuses or through the common, anterior, and posterior facial veins. In a series of eight cases reported by Dixon and Helwig, three patients with postanginal sepsis had septic pulmonary emboli and internal jugular thrombophlebitis documented at autopsy. More recently, Hadlock confirmed, with retrograde jugular venography, the presence of jugular thrombophlebitis in a patient with a parapharyngeal abscess and septic pulmonary emboli. Note that due to extensive pharyngeal collateral venous channels, the involved internal jugular vein need not be ipsilateral to the pharyngeal infection.

The parapharyngeal abscess is generally produced by an anaerobic organism. Bacteroides and Fusobacterium, due to their cell wall char-
Fig. 7. Contrast-enhanced CT scan at the level of the hyoid bone demonstrates a low density left parapharyngeal soft tissue mass displacing the oropharynx to the right. The mass compresses and narrows the left internal jugular vein (arrow), probably accounting for its poor opacification. No venous thrombus was identified.

Fig. 2. Enhanced CT scan at the level of the thyroid gland (curved arrows) shows the mass (small arrows) extending across the midline anterior to the thyroid gland and trachea. The mass has a 17 HU attenuation value.

Fig. 3. Two peripheral thin-walled cavities (arrows) abutting the pleura are present in the right upper lung. The loculated effusion (E) on the left side was sampled under ultrasonic guidance and grew *Fusobacterium nucleatum*.

Characteristics, have a propensity to produce thrombophlebitis. The cell wall's Lipid A moiety of the lipopolysaccharide base accelerates blood coagulation, promoting clot formation in a platelet-independent manner, perhaps due to inherent heparinase, collagenase, or thrombolysin activity. Beyond its effect on the internal jugular vein, the parapharyngeal abscess may itself extend cranially to involve the temporomandibular joint and base of the skull or caudally to involve the mediastinum.

CT offers many advantages over conventional radiographic studies in the evaluation of the neck. The complex anatomy of the parapharyngeal space is displayed with exceptional clarity by CT allowing discovery of occult neoplasm or infection. CT also permits definition of cephalad and caudal extension of a mass or...
abscess, assisting in treatment planning. Finally, a specific diagnosis of internal jugular venous thrombosis can now be made by CT\textsuperscript{12,13}, permitting non-invasive evaluation of the internal jugular vein in patients with suspected postanginal sepsis. In our patient, marked compression of the internal jugular vein was produced by the parapharyngeal collection, but no definite thrombus was demonstrated.

Presumably, a thrombus involved a smaller venous branch, or was not visualized due to inadequate contrast enhancement.

Postanginal sepsis is a diagnosis that may elude the unwary physician.

\textit{Résumé.} Nous rapportons une observation de sépticémie post-angineuse, en discutant de la pathogénèse et de la séméiologie. La tomodensitométrie axiale révèle parfaitement l’inflammation parapharyngée, son extension le long des fascias, une éventuelle compression ou thrombose de la veine jugulaire interne, ainsi que les embols septiques.

**REFERENCES**


\textit{Yousem, et al: CT of postanginal sepsis}