

Answer

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Correct response is B: antibiotics for sphenoid sinusitis. The scan demonstrates an air fluid level in the right sphenoid sinus just posterior to the ethmoid air cells. The left sphenoid sinus is not visible on this slice. The patient was admitted by the ENT service and started on intravenous antibiotics. His symptoms gradually improved, and he was discharged 4 days later on oral antibiotics.

Sphenoid sinusitis is an uncommon diagnosis that accounts for approximately 3% of acute sinus infections. It usually occurs in the setting of pansinusitis and is often misdiagnosed due to its innocuous presentation.^{1,2} This has important implications because several vital structures lie adjacent to the sphenoid sinus. These include the pituitary gland, dura mater, internal carotid artery, optic nerve and chiasm, cavernous sinus, oculomotor nerve, abducens nerve, trochlear nerve, ophthalmic nerve, maxillary nerve, sphenopalantine ganglion, and pterygoid canal and nerve. Extension of infection through the mucosal barrier and thin bony walls of the sphenoid sinus can lead to significant and potentially irreversible neurological complications, such as septic cavernous sinus thrombosis, suppurative meningitis, subdural abscess, and pituitary insufficiency.³

Predisposing factors for acute sphenoid sinusitis include congenital obstruction of the sphenoid ostium, malignancy, foreign body, turbinate hy-

perplasia, nasal septal deviation, previous facial or orbital fracture, or radiotherapy. Physiological obstruction may result from viral infection, deep-sea diving, barotrauma, dental infection, or intranasal cocaine use.¹ Predisposing medical conditions include diabetes mellitus, chronic steroid use and immunosuppression.

Retro-orbital or vertex headache is the most common presenting symptom in isolated sphenoid sinusitis.⁴ Quality of the headache can vary, as can the location. It is often worse with activity and usually prevents the patient from sleeping. Over-the-counter analgesics are generally ineffective. Other symptoms include facial, mandibular, or dental pain and facial paresthesias. Blurred vision or diplopia, as well as cranial nerve deficits occur with infectious extension into the cavernous sinus and compression of the surrounding structures.⁵ Direct extension past the dura leads to signs of meningeal irritation.

Plain films may be helpful but miss approximately 25% of cases. CT scan is the preferred modality for assessing possible sinus pathology. The WBC count may be mildly elevated but is often normal. White blood cells are often present in the cerebrospinal fluid, and cultures are positive approximately 40% of the time.¹ *Streptococcus pneumoniae* and other streptococcal species are the most common causative organisms, but *Staphylococcus aureus* and *Haemophilus influenzae* are reported frequently. Nosocomial sinusitis secondary to nasal packing or indwelling or nasogastric tubes usually

produces polymicrobial infection, often with *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, or *Enterobacter* species. Diabetes, leukemia and other conditions associated with immune compromise increase the likelihood of invasive fungal infection, especially with *Aspergillus*.^{1,5}

Treatment is with a broad spectrum antibiotic that covers *Streptococcus* species, *Staphylococcus* species, and *H. influenzae*. Transnasal or transtympanic surgical drainage may be necessary if the patient worsens or fails to improve.

References

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