

A 7-year-old boy is brought to the emergency department with a swollen and painful left eye. He has also had worsening nasal discharge for the past 6 days. His temperature is 39.4° C (103° F), blood pressure is 100/70 mm Hg, pulse is 118/min, and respirations are 18/min. Examination of the left eye shows injected conjunctiva, swollen and erythematous eyelids, and pain with movement. Visual acuity is 20/400 in the left eye and 20/30 in the right. Facial sensation is intact and fundoscopic examination is normal. Which of the following is the most likely diagnosis?

- ☐ A. Anterior uveitis
- ☐ B. Cavernous sinus thrombosis
- ☐ C. Conjunctivitis
- ☐ D. Optic neuritis
- ☐ E. Orbital cellulitis
- ☐ F. Preseptal cellulitis

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- ☐ A. Anterior uveitis [3%]
- ☐ B. Cavernous sinus thrombosis [4%]
- ☐ C. Conjunctivitis [4%]
- ☐ D. Optic neuritis [1%]
- ☒ E. Orbital cellulitis [81%]
- ☐ F. Preseptal cellulitis [7%]

Proceed to Next Item

Explanation:

User Id: [REDACTED]

Symptom/Sign	Preseptal Cellulitis	Orbital Cellulitis
Eyelid edema	+	+
Eyelid erythema	+	+
Eyelid tenderness	+	+
Fever	+/-	+/-
Leukocytosis	+/-	+/-
Ophthalmoplegia	-	+

Explanation:

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Eyelid edema	+	+
Eyelid erythema	+	+
Eyelid tenderness	+	+
Fever	+/-	+/-
Leukocytosis	+/-	+/-
Ophthalmoplegia	-	+
Pain with extraocular movements	-	+
Proptosis	-	+/-
Vision impairment	-	+/-

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Although the clinical features of preseptal (periorbital) and orbital (postseptal) cellulitis can overlap, these conditions have very different clinical consequences. Preseptal cellulitis (**Choice F**) is a mild infection of the eyelid anterior to the **orbital septum**; orbital cellulitis is a serious infection posterior to the orbital septum. The most commonly identified organisms are *Staphylococcal aureus*, *Streptococcal pneumoniae*, and other streptococci. Dangerous complications due to the valveless ophthalmic venous system include abscesses within the orbit or brain, blindness, or sinus venous thrombosis. If the diagnosis of orbital cellulitis is unclear, computed tomography imaging can help identify inflammation or abscesses within the orbit.

(**Choice A**) Anterior uveitis is inflammation of the anterior chamber of the eye caused by

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(**Choice A**) Anterior uveitis is inflammation of the anterior chamber of the eye caused by trauma, infection, or autoimmune disorders. Although anterior uveitis can present as eye redness, pain, and blurry vision, this patient does not have pupil defects, corneal precipitates, or leukocytes, making this diagnosis less likely.

(**Choice B**) Headache is the most common early symptom of cavernous sinus thrombosis (CST) and can become unbearable. CST is also characterized by periorbital edema, exophthalmos, and chemosis, but fundoscopy typically reveals papilledema and dilated tortuous retinal veins. Eye swelling in CST usually begins as a unilateral process but quickly (24-48 hours) involves the other eye. Because the cranial nerves III, IV, V, and VI pass through the **cavernous sinus**, their involvement accounts for many manifestations (eg, ptosis). This patient does not have headache or binocular symptoms, making this diagnosis less likely.

(**Choice C**) The diagnosis of conjunctivitis can be made if there is inflammation of the conjunctiva (eg, erythema, exudates) but no proptosis, pain with eye movements, or vision loss. Conjunctivitis is therefore not the cause of this patient's symptoms.

(**Choice D**) Optic neuritis is an inflammatory, demyelinating condition that causes acute vision loss and pupillary defects. It most commonly affects 1 eye and is associated with multiple sclerosis. Optic neuritis does not cause protrusion of the eyeball, edema of the eyelids, or high fevers, making the diagnosis unlikely in this patient.

Educational objective:

Orbital cellulitis is a serious bacterial infection with alarming symptoms such as pain with extraocular movements, visual impairment, and ophthalmoplegia. Dangerous complications include orbital abscess, intracranial infection, and cavernous sinus venous thrombosis.

References:

1. Orbital complications of sinusitis in children

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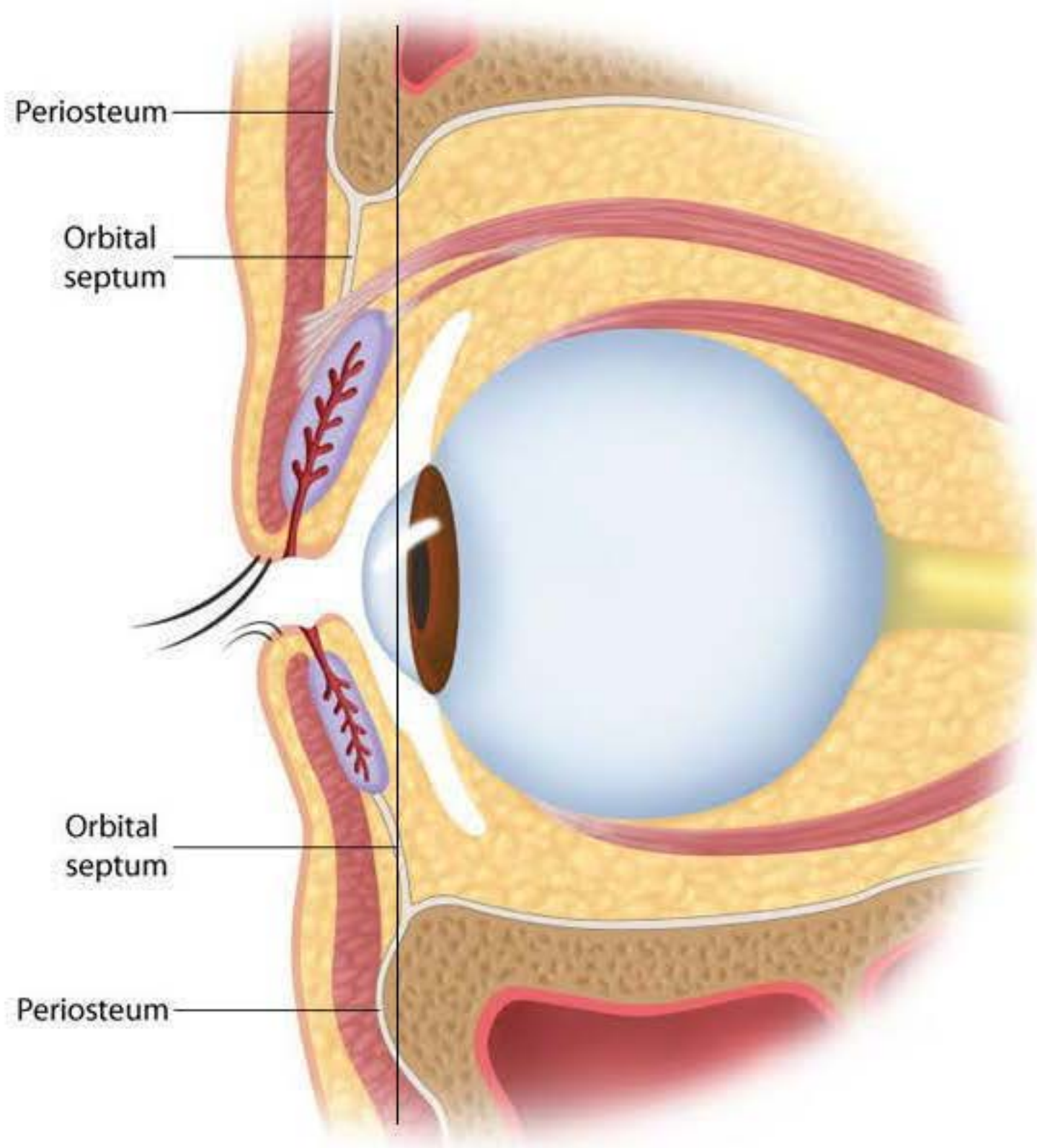
References:

1. [Orbital complications of sinusitis in children.](#)
2. [Paediatric pre- and post-septal peri-orbital infections are different diseases. A retrospective review of 262 cases.](#)
3. [Periorbital and orbital cellulitis.](#)

Media Exhibit

anatomy

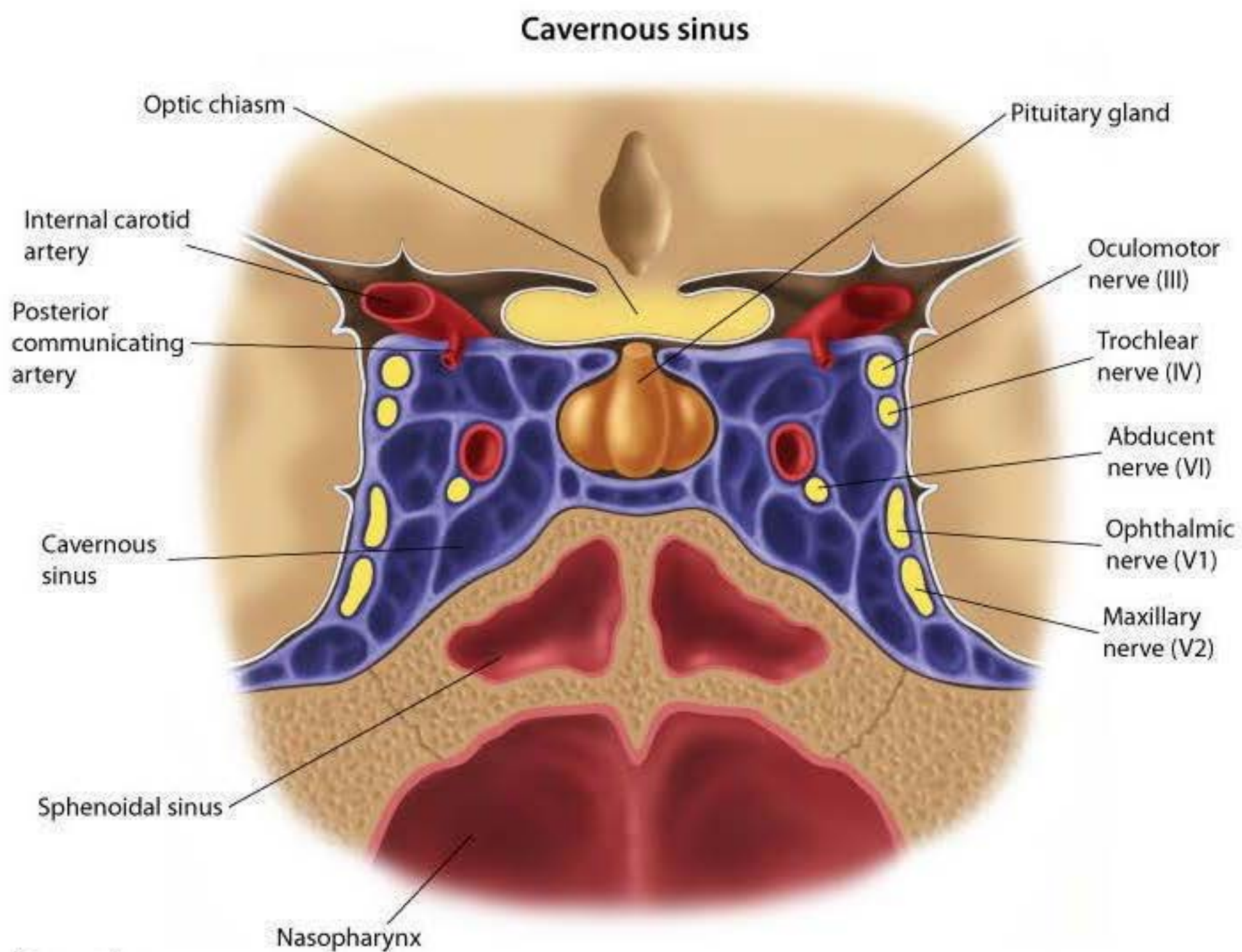
Orbital anatomy



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Media Exhibit

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