Pearls & Oy-sters: Persistent elevation of serum carcinoembryonic antigen in secretory menigioma

**TITLE:** This is your take-home point. For a case, include essential patient features to let readers know why your patient’s presentation is unique enough to be published.

**PEARLS:** These are high yield facts or tips about the patient’s diagnosis. Not the most basic facts, but the most important. Keep your writing short and to the point.

**OY-STERS:** These are also tips about the diagnosis, but should focus on common mistakes or easily overlooked findings.

**CASE REPORT:** The secret to a great case report is to tell the patient’s story using clear, straightforward language. Just give the facts. Avoid run-on sentences by using short statements. Think about which details are necessary to make the diagnosis.

**DISCUSSION:** Organize your discussion into sections before you start writing.

**REFERENCES:** Each statement or group of statements that is not general knowledge should have a reference. Make sure the information you are citing comes from the paper you list as the reference. Make sure references are in the order they appear.

---

**PEARLS:**
- Elevation in serum carcinoembryonic antigen (CEA) is uncommon in the context of primary CNS neoplasms but can be seen with metastatic brain tumors. CEA elevation can be the presenting feature of a secretory menigioma (SM), a rare subtype of WHO grade I menigioma.
- Despite its rarity, SM is a highly relevant entity as it is frequently associated with severe peritumoral brain edema, which can lead to perioperative morbidity and mortality.

**OY-STERS:**
- SM can present diagnostic and management pitfalls for neurologists, neurosurgeons, and pathologists.
- In patients with oncologic history presenting with brain tumors, the possibility of nonmetastatic etiologies should always be considered.

**CASE REPORT**
A 73-year-old woman with stage 3B chronic kidney disease (CKD) and remote history of tobacco use was diagnosed with stage 1 (nonmetastatic) colon cancer on a screening colonoscopy. The tumor was discovered in the proximal ascending colon. She underwent laparoscopic right hemicolectomy and did not require any adjunctive chemotherapy or radiation. At the time of her initial diagnosis, serum CEA level was marginally elevated at 3.1 ng/mL (reference range 0–3.0 ng/mL). Five years later, despite being asymptomatic with stable renal function, her serum CEA level was elevated at 8.2 ng/mL. This prompted a CT with contrast of

**DISCUSSION**
CEA is a cell adhesion glycoprotein produced during fetal development. Although production typically ceases at birth, elevated serum CEA level can occur in multiple neoplasms, most notably in gastrointestinal and gynecologic malignancies. However, elevated serum level can also be seen in states such as nicotine dependence, CKD, liver cirrhosis, Serum CEA can also be elevated in CNS malignancies. In a study by Suzuki and Tanaka,7 mild elevations in serum CEA were present in 4% of primary brain tumors, never exceeding 4.0 ng/mL. Conversely, 37% of patients with metastatic brain tumors had elevated serum CEA levels regardless of their primary neoplasm. The majority had concentrations greater than 5.0 ng/mL. Pronounced elevation in serum CEA in the context of a primary brain tumor, whether parenchymal or meningeal, is uncommon.

**REFERENCES:** Each statement or group of statements that is not general knowledge should have a reference. Make sure the information you are citing comes from the paper you list as the reference. Make sure references are in the order they appear.