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A Vexing CA 125 Raise in a Patient with Pleural Effusion and Ovarian Cancer

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We enjoyed reading the meta-analysis by Yang et al. [1] on diagnostic accuracy of tumor markers for malignant pleural effusion. Their conclusions were that in patients with undiagnosed pleural effusion, the combinations of positive tumor markers such as CEA and CA 15–3, and CEA and CA 19–9 are highly suspicious for malignancy. Serum tumor markers are proteins or glycoproteins which are secreted by tumorous and nonneoplastic cells. They are widely used to monitor treatment response in cancer patients and to a far lesser extent for the diagnosis of certain tumor types. The following case report illustrates a misleading raise of CA 125 in a patient with ovarian cancer.

A 71-year-old woman presented with dyspnea. Five years prior, FIGO stage IV adenocarcinoma of the ovary had been diagnosed and treated with carboplatin, paclitaxel, and interval debulking surgery. CA 125 had initially been elevated (24,702 U/mL), then normalized upon treatment and remained below the upper limit of normal (<35 U/mL). On current examination, the patient suffered from bilateral pleural effusions, multiple pulmonary micronodules and a reduced systolic left ventricular ejection fraction (35–40%). B-type natriuretic peptide (NT-BNP) was elevated to 41,708 pg/mL (<125 pg/mL). Renal failure (GFR 12 mL/min/1.73 m²) was attributed to a history of polycystic kidney disease. On admission, serum CA 125 was found to be elevated to 142 U/mL, while it had been normal 3 months prior. The cytologic examination of the right-sided pleural effusion did not reveal malignant

cells. Heart failure was treated with diuretics and an angiotensin II receptor inhibitor; the patient recovered and remained clinically stable and well. CA 125 dropped to 81.8 U/mL after 4 and to 23.2 U/mL after 8 weeks, while NT-BNP dropped to 233 pg/mL.

CA 125 is a frequently used and sensitive tumor marker to guide treatment of patients with ovarian cancer. However, this large glycoprotein is synthesized by epithelial cells in response to diverse stimuli.

The first study investigating possible associations of CA 125 and cardiac function was published by Nägele et al. [2] in 1999. CA 125 was significantly correlated with left ventricular filling pressures and heart failure markers such as norepinephrine and atrial natriuretic peptides. To date, the underlying pathophysiologic mechanisms of CA 125 elevation in patients with heart failure are not fully elucidated. Huang et al. [3] suggested that CA 125 may be shed from mesothelial cells in response to mechanical shear stress and therefore serve as a surrogate marker for fluid overload and heightened inflammatory conditions. Serum tumor markers may increase in patients with chronic kidney disease due to damaged renal clearance and elimination.

In acutely ill patients, it can be difficult to designate a primary cause of an elevated CA 125 as cardiovascular impairment and frequently associated multi-organ dysfunction might be present. In addition, as illustrated in this case, it can take many weeks to normalize after addressing the underlying nonmalignant disease. It seems prudent to always consider these conditions before initiating changes in cancer treatment based on an elevated CA 125.

References

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