Malignant Pericardial Tamponade Secondary to Papillary Serous Adenocarcinoma of the Ovary

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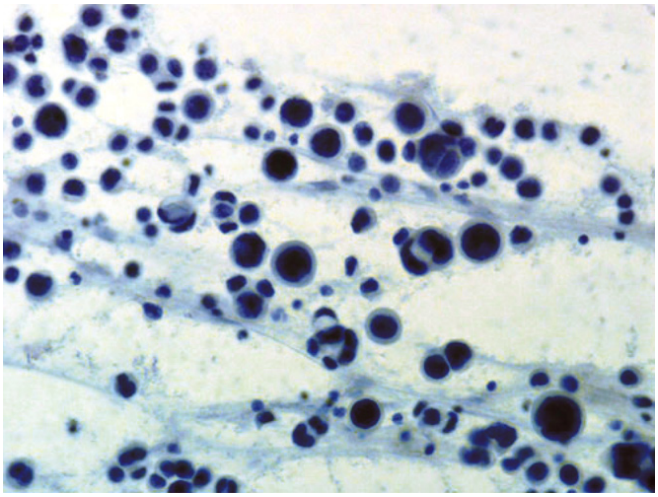
Neoplastic pericarditis is the most common cause of cardiac tamponade, accounting for 32–58% of cases. Epithelial ovarian cancer metastasizes typically by intraperitoneal exfoliation and retroperitoneal lymphatic spread along the ovarian blood supply. Pericardial involvement in patients with ovarian cancer is rare. A medline search revealed 13 cases of epithelial ovarian carcinoma metastasizing to the pericardium, of which 5 were associated with cardiac tamponade [1-5]. We report here a 74 year old patient with malignant cardiac tamponade and advanced epithelial ovarian cancer. With the use of multi-agent chemotherapy this complication is likely to be seen more frequently in the future. Physicians should be aware of this possible fatal complication.

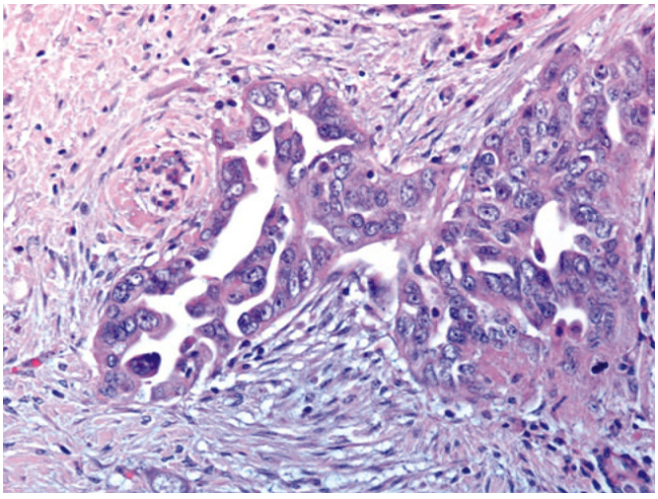
Patient Description

A 74 year old woman had a stage 3 ovarian carcinoma diagnosed in June 2003. Laparotomy revealed omental cake and ovarian tumor, and biopsies showed papillary serous adenocarcinoma of the ovary. Bilateral oophorectomy and omentectomy were performed. Chemotherapy consisting of doxorubicin 5-fluorouracil and cyclophosphamide was given until January 2004. In September 2005 progression was suspected on pelvic examination, computerized tomography scan and elevated cancer markers. Treatment with DOXIL was given until 5 months before her admission.

The patient was admitted to our department with symptoms of dyspnea and chest pain. On physical examination blood pressure was 90/60 with pulsus paradoxus of 25 mmHg and pulse 100 beat per minute. Early systolic murmur 2/6 was heard along the left sternal border. There were no breath sounds in the lung bases and shifting dullness examination suggested ascites. Electrocardiogram showed low voltage and non-specific ST-T changes. Chest X-ray revealed moderate pleural effusion in the right side. Echocardiography demonstrated a large pericardial effusion with signs of right atrium and right ventricle diastolic collapse. Respiratory variations in mitral inflow were also demonstrated. The clinical picture and the echocardiogram were consistent with cardiac tamponade. Immediate echo-guided pericardiocentesis was performed via the subxyphoid approach. A catheter was left for pericardial drainage, which yielded 800 ml of hemorrhagic pericardial effusion. Adenocarcinoma cells were cytologically demonstrated [Figure A]. The cells were similar to the malignant cells of the ovary [Figure B]. After 48 hours no further effusion was observed and the catheter was removed. The patient was discharged from hospital and stayed fairly well for nearly a month when she was again hospitalized with progressive dyspnea without echocardiographic evidence of pericardial effusion. A 1000



[A] Malignant cells from the pericardial effusion



[B] Serous adenocarcinoma of the ovary

ml pleural effusion with tumor cells was drained. The patient deteriorated quickly however, and died one week later.

Comment

Our case represents the rare manifestation of an atypical site of metastasis for ovarian carcinoma. The typical routes of metastasis for ovarian carcinoma are intraperitoneal and retroperitoneal. Of these metastases the majority are intraperitoneal. Of the retroperitoneal spread, lymphatics associated with the ovarian vessels drain into the left renal vein and the inferior vena cava, while lymphatics associated with the broad ligament drain into the external and internal iliac veins, the obturator vein and the round ligament to the inguinal lymphatics. According to our literature search, there are 13 cases of epithelial ovarian carcinoma metastasizing to the pericardium. Of these cases five were associated with a critical situation such as cardiac tamponade [1-5]. In this case the pericardial metastasis, most probably through the lymphatic route, was also associated with cardiac tamponade and was treated with pericardiocentesis. Apart from pericardiocentesis, there are some potential treatments described in the literature for these patients. Tetracycline, doxycycline, 5-fluorouracil or cisplatin have been used to induce pericardial sclerosis. Pericardectomy has been performed for recurrent malignant pericardial effusion. Despite reports of successful treatment and complete response and resolution of pericardial and intraperitoneal tumor, ovarian carcinoma with pericardial metastases portends a poor prognosis.

As chemotherapy for ovarian cancer continues to improve, survival will increase. With this increased patient longevity, as yet undescribed patterns of spread, such as pericardial metastasis, will emerge. It is possible that we will be diagnosing these unusual metastases more often now that current primary and salvage chemotherapy regimens have improved the disease-free and overall survival for advanced-stage ovarian carcinoma. It is important that doctors treating patients with ovarian carcinoma be aware of this critical and life-threatening complication.

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Capsule

Mitochondrial diversion and aging

The protein p66Shc facilitates protein-protein interactions in growth factor signaling pathways. But mutations in Shc can enhance life span in mammals. This effect appears to depend on a different function of Shc whereby it exerts oxidoreductase activity in mitochondria and generates oxygen radicals that lead to cell death. Pinton et al. show that the activity of Shc in the mitochondria depends on its phosphorylation by protein kinase C and consequent binding of the prolylisomerase Pin1. This leads to a conformational change in the protein and to its accumulation in mitochondria. This signaling pathway could provide a target to help delay aging.

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Eitan Israeli

Capsule

Mutation cause metabolic syndrome?

Patients with coronary artery disease (CAD) often have accompanying hypertension, diabetes, and aberrant levels of cholesterol and triglycerides. This diverse group of risk factors is collectively known as "metabolic syndrome," but the underlying molecular mechanisms that link these disorders are still poorly understood. Mani and co-workers have identified the causative mutation in a family afflicted with a rare, inherited form of early-onset CAD that co-segregates with many features of metabolic syndrome. The culprit gene encodes low density lipoprotein receptor-related protein 6 (LRP6), a co-receptor in the Wnt cellular signaling pathway.

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