Timely diagnosis of primary pericardial mesothelioma

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Abstract

We present a case of a 66-year-old male with dyspnea and bilateral lower-extremity edema. Pericardiotomy and biopsy were performed and reported malignant mesothelioma. Primary pericardial mesothelioma is a highly malignant tumor that has unfavorable prognosis, and is extremely rare, even among heart tumors. In our case, despite the large amount of pericardial effusion of the first echocardiography, the infiltrated like pericardium was still detected. In addition, cytology after pericardiocentesis reported suspicion of malignancy, which followed by pericardiotomy and biopsy, lead to our timely diagnosis.

Timely diagnosis of primary pericardial mesothelioma

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We present a case of a 66-year-old male with dyspnea and bilateral lower-extremity edema. The patient was a nonsmoker and denied history of prior asbestos exposure. Chest radiography (CXR) revealed bilateral pleural effusions and moderate cardiomegaly. Transthoracic echocardiography demonstrated an irregular, thickened pericardium with heterogeneous echogenicity tumor mass concomitant with large circumferential pericardial effusion (Fig 1, VIDEO_1, and VIDEO_2). We then performed examinations to rule out diagnosis of infiltration pericardium. Upon hospitalization, Non-contrast Computed tomography (CT) scan of the chest and abdomen revealed a thickened pericardium with pericardial effusion encasing the heart and a few pleura effusion. (Fig.2). Pericardiocentesis with pigtail drainage was immediately performed and sent for cytology testing, and the report suspected malignant. Consequently, pericardiotomy and biopsy were performed and reported malignant mesothelioma. The micro showed pericardial tissue with epithelioid type mesothelioma. The tumor cells revealed positivity for Calretinin, GATA-3(GATA Binding Protein 3) and CK(Creatine Kinase), and focal positivity for D2-40(Podoplanin). The immunostatin for BAP-1(Breast cancer type 1

susceptibility protein associated protein-1) showed loss of nuclear positivity in the tumor cells that, coupled with morphology, accord with a primary pericardial mesothelioma diagnosis. (Fig 3) We continued with PET for further evaluation which showed increased FDG uptake of the entire pericardium, confirming the diagnosis of previous examinations. (Fig 4) Primary pericardial mesothelioma is a highly malignant tumor that has unfavorable prognosis, and is extremely rare, even among heart tumors, with an incidence of <0.002% and accounting for less than 5% of all mesotheliomas. [1] Patients often show nonspecific but typical symptoms like constrictive pericarditis, cardiac tamponade, and heart failure. [2] From the limited literature, up to 75 percent of cases were diagnosed postmortem [3] and cytologic analysis of pericardial fluid were often negative [4]. Echocardiography is the most commonly used investigative tool but is low in the identification of pericardial mesotheliomas. In our case, despite the large amount of pericardial effusion of the first echocardiography, the infiltrated like pericardium was still detected. In addition, cytology after pericardiocentesis reported suspicion of malignancy, which followed by pericardiotomy and biopsy, lead to our timely diagnosis. Echocardiography after the drainage of pericardial effusion displayed a notable heterogenous echogenicity mass (Fig 5, VIDEO_3, and VIDEO_4). The patient passed away after two months of chemotherapy.

VIDEO_1, and VIDEO_2

Parasternal view in Transthoracic echocardiography showing a thickened pericardium with heterogeneous mass (arrowhead) and large pericardial effusion. (LV: Left Vetricular, RV: Right Ventricular, Ao: Aorta, PE: Pericardial Effusion)

VIDEO_3, and VIDEO_4

Transthoracic echocardiography presenting heterogeneous hypoechoic mass (star key) surrounding the whole heart with septal bounce after the drainage of pericardial effusion and pleural effusion. (LV: Left Vetricular, RV: Right Ventricular, LA: Left Atrium, RA: Right Atrium, Ao: Aorta)

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