Constrictive pericarditis is most often idiopathic or it occurs following cardiothoracic surgery or radiation therapy. Constrictive pericarditis is most commonly idiopathic or it occurs following cardiothoracic surgery or radiation therapy. When metastatic cancer involves the pericardium, it typically causes pericardial effusion (with or without tamponade). Few case reports of metastatic lung cancer causing constrictive pericarditis have been reported and fewer still describe constrictive pericarditis as the first manifestation of the neoplastic process. We report the case of a 33-year-old patient with an occult malignancy presenting as constrictive pericarditis.

2. Case report

A 33-year-old patient presented with a six months history of dyspnoea, general malaise, weight loss, ascites and ankle oedema. Chest X-ray demonstrated bilateral pleural effusions. Autoimmune and vasculitic screens were normal and tumour markers were negative. Computed tomography pulmonary angiogram (CTPA) revealed bilateral pleural effusions, pericardial thickening and a small sub-segmental pulmonary embolism with no obvious lung pathology. A pleural tap was performed and this was negative for TB, infection or malignancy. Transthoracic echocardiography demonstrated a thickened pericardium, a dilated superior vena cava (SVC) and inferior vena cava (IVC) which raised the possibility of constrictive pericarditis. A cardiac magnetic resonance imaging (MRI) confirmed this diagnosis with classical septal bouncing with respiratory motion and markedly thickened pericardium (Fig. 1).

Radical pericardectomy was carried out through a conventional median sternotomy incision. An unusual finding was uniformly marked thickening that completely encased the SVC, the IVC and the pulmonary trunk, and even beyond the phrenic nerves. The phrenic nerves were dissected out carefully and the entire posterior thickened pericardium was removed to free the heart completely (Fig. 2).

Following removal of the pericardium there was an immediate improvement in blood pressure and a drop in central venous pressure (CVP) from 29 mmHg to 19 mmHg. Histopathology of pericardium indicated a differential diagnosis of metastatic adenocarcinoma or mesothelioma; however, malignant mesothelioma was excluded using immunohistochemistry and metastatic lung adenocarcinoma was confirmed. Anterior hilar nodes and thymic tissue were also extensively replaced with metastatic adenocarcinoma.

With a working diagnosis of occult metastatic lung adenocarcinoma, the patient underwent a CT chest, abdomen and pelvis on day 6 postoperatively which revealed no gross lesion. Despite the marked improvement and resolution of the symptoms of constrictive pericarditis the patient unfortunately died 29 days postoperatively from complications secondary to repeated pulmonary emboli.

3. Discussion

Constrictive pericarditis is most commonly idiopathic or it occurs secondary to mediastinal radiotherapy or following cardiac surgery. Less common aetiologies include infection, connective tissue disorders, malignancy, uraemia, and sarcoidosis [1], tuberculosis is a rare cause of constrictive pericarditis in the Western world [2]. Constrictive pericarditis can rarely be caused by malignancy, however, malignancy may also manifest as pericardial effusion (with or without tamponade) or an encased heart with thickening of both visceral and parietal layers, resulting in a constrictive physiology.
Metastatic involvement of the heart is much more common than primary tumours. The prevalence of such metastatic involvement has been reported as ranging from 15% to 30% in autopsies performed for cases of neoplastic disease and 4% of general autopsies [3]. Lung and breast cancers are the most frequent causes of malignant pericardial disease; however, lymphoma and mesothelioma can also involve the pericardium [4]. The most common cell type to metastasise to the heart is adenocarcinoma [5]. Cardiac involvement can develop by retrograde lymphatic, haematogenous, direct or transverse extension. The cardiac location of the tumour depends on the path of dissemination. Lymphatic spread is usually to the pericardium and this is the most common metastatic pathway. In contrast, haematogenous spread usually produces myocardial metastasis and, much less commonly, endocardial involvement [6].

Few case reports of metastatic lung cancer causing constrictive pericarditis have been reported [7] and no case reports could be found in the literature that describe constrictive pericarditis in the absence of pericardial effusion as the first manifestation of the neoplastic process [8].

Metastatic tumour progression to the pericardium is generally characterised by pericardial effusion, which can result in cardiac tamponade [9]. Pericardial constriction by diffuse pericardial thickening of metastatic origin is a rare complication, and it would be very unusual for such constriction to be the first manifestation of the neoplastic process [10].

In the literature only one case has described constrictive pericarditis secondary to metastatic lung cancer; however, this case described an effusive constrictive pericarditis which was diagnosed at post mortem [8]. We believe that the case described in our centre is the only reported case to describe constrictive pericarditis in the absence of a pericardial effusion, a diagnosis that was made ante mortem and which unfortunately was the primary presentation of metastatic adenocarcinoma of the lung.

References