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Case Report

Presumption of pericardial endometriosis using MRI: Case report and review of the literature

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ABSTRACT

Endometriosis is a condition where hormonal-responsive endometrial tissue grows outside the uterus usually within the pelvic cavity. Extra-pelvic endometriosis is rare and may involve the pericardium. We report the first case of pericardial endometriosis suspected using cardiac magnetic resonance imaging.

1. Introduction

Endometriosis is a disease characterized by the presence of normal endometrial mucosa abnormally implanted in locations other than the uterine cavity. It can be endopelvic or extrapelvic. Pelvic endometriosis is the most frequent clinical presentation and include endopelvic ectopic implants located in minor pelvic, the ovaries, the fallopian tubes and the uterosacral ligaments posterior of uterus. Extrapelvic endometriosis is a rare condition but in the literature we find several cases of endometriosis in the gastrointestinal tract, urinary tract, the upper and lower respiratory system, the diaphragm and pleural space. Pericardial involvement is an exceptional location of endometriosis described in few cases [1–3]. Here, we describe the first case of endometriosis where clinical and cardiac magnetic resonance imaging (CMR) features are highly suggestive of pericardial endometriosis.

2. Case report

A 42-year-old woman was referring in our institution (Hôpital Saint Joseph) for unexplained chronic and catamenial chest pain in a patient with clinical history of pelvic endometriosis. Indeed, the transvaginal ultrasonography detected a deep pelvic endometriosis with bilateral uterosacral ligaments lesions. Chest pain relieved when sitting up and worsened when lying down or breathing deep. There was no radiation to the right shoulder or jaw. Physical examination was normal. The transthoracic echocardiography found only a moderate pericardial effusion. To rule out coronaropathy and calcified pericarditis, cardiac computed tomography angiography (CTA) was performed revealing a pericardial effusion without pericardial calcification or pleural effusion (Fig. 1), coronary artery disease was ruled out. Thus, we suspected a pericardial involvement of endometriosis and the patient underwent a cardiac magnetic resonance imaging (CMR). Pericardial fluid was measured maximum at 13 mm (Fig. 2a; black star). The pericardium was thickened and hyperintense on T1 (T1W) and T2 weighted (T2W) fat suppressed sequences (Fig. 2b and c; white arrows). At this moment, chest pain and pelvic pain were persistent and uncontrolled (pain scale severity (PNS): 9/10) despite an oral contraceptive therapy (desogestrel). Oral continuous contraceptive therapy was modified to nomegestrol and at 4 months follow-up, catamenial chest pain and pelvic pain had significantly decreased (PSS: 2/10). A new CMR was performed at 4 months follow-up demonstrating a decrease in pericardial effusion measuring 7 mm with a thin pericardium with normal signal on T1W and T2W fat suppressed

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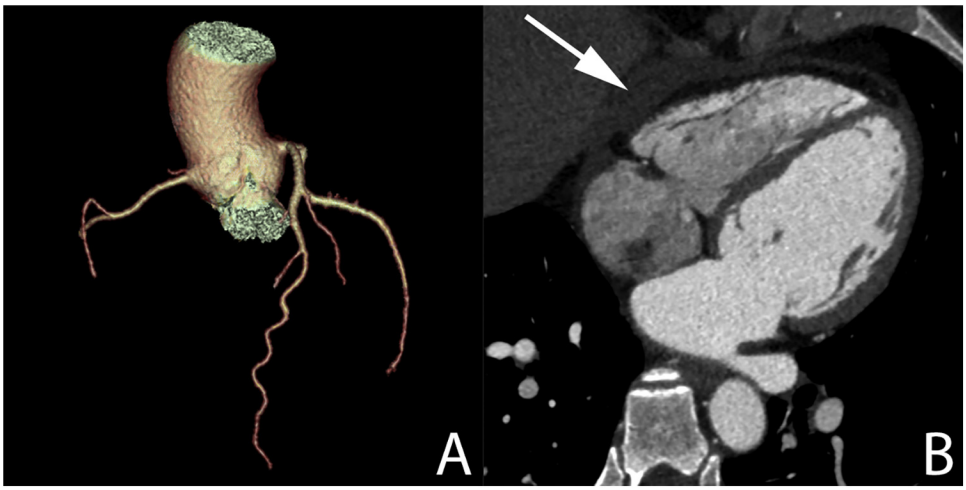

Fig. 1. Cardiac computed tomography. (A) Coronary artery stenosis was ruled out. (B) Four chamber view showed a moderate pericardial effusion (white arrow) without pericardial calcification.

images (Fig. 2d–f). These findings suggested a pericardial involvement with significant response to nomegestrol in this 42-year-old woman with endometriosis.

3. Discussion

To the best of our knowledge, this is the first case in the literature of presumed pericardial endometriosis using CMR. There is only one case report [3] of a 28-year-old woman with a clinical history of endometriosis who presented a recurrent cyclic pelvic pain and upper-quadrant abdominal pain. The surgery revealed endometrioid tissue in diaphragm, pleural space and pericardium. In 2004, Francis et al. [2] suspected radiologically a pericardial endometriosis using chest computed tomography which showed a pericardial effusion associated with a right sided pleural effusion and ascites.

The only limitation of this case relates to the lack of histologic confirmation. Such confirmation can be obtained only at surgery or cardiac biopsy, which is not ethically indicated in this patient.

In a recent literature review [4], thoracic endometriosis included presence of ectopic endometrial tissue in the pleura, the pericardium and the diaphragm. The most frequent clinical presentation is the catamenial pneumothorax including catamenial hemothorax, catamenial hemoptysis, endometriotic lung nodules and catamenial chest pain.

The physiopathology of the thoracic endometriosis is unclear and probably multifactorial. For the theory of retrograde "regurgitation", the endometrial cells circulate with the peritoneal liquid along the right peritoneal gutter and up the hemidiaphragm explaining the increased frequency of catamenial pneumothorax in the right side. In this hypothesis, endometrioid tissue is passing through the pleural space and then in the pericardium.

Some authors described another theory about the metastatically spread of endometrial implants through veins or lympatics vessels.

Magnetic resonance imaging is a very good diagnosis tool widely used to detect deep pelvic endometriosis lesions as a second line technique after ultrasound. Moreover, this technique is the best imaging technique for preoperative staging of endometriosis by many authors [5,6]. For thoracic endometriosis and especially pericardial endometriosis, cardiac magnetic resonance imaging appears to be the modality of choice to depict pericardial involvement. Imaging features of thoracic endometriosis reported in a very recent imaging review [7] include pericardial implants, pericardial effusion, pleural effusion, diaphragmatic implants and pneumothorax.

In conclusion, the association between a cyclic and catamenial positional chest pain worsening with breathing deep in a patient with medical history of endometriosis should be suggestive of pericardial endometriosis. This case underlines also the key role of cardiac magnetic resonance imaging in the investigation and follows up of pericardial endometriosis.

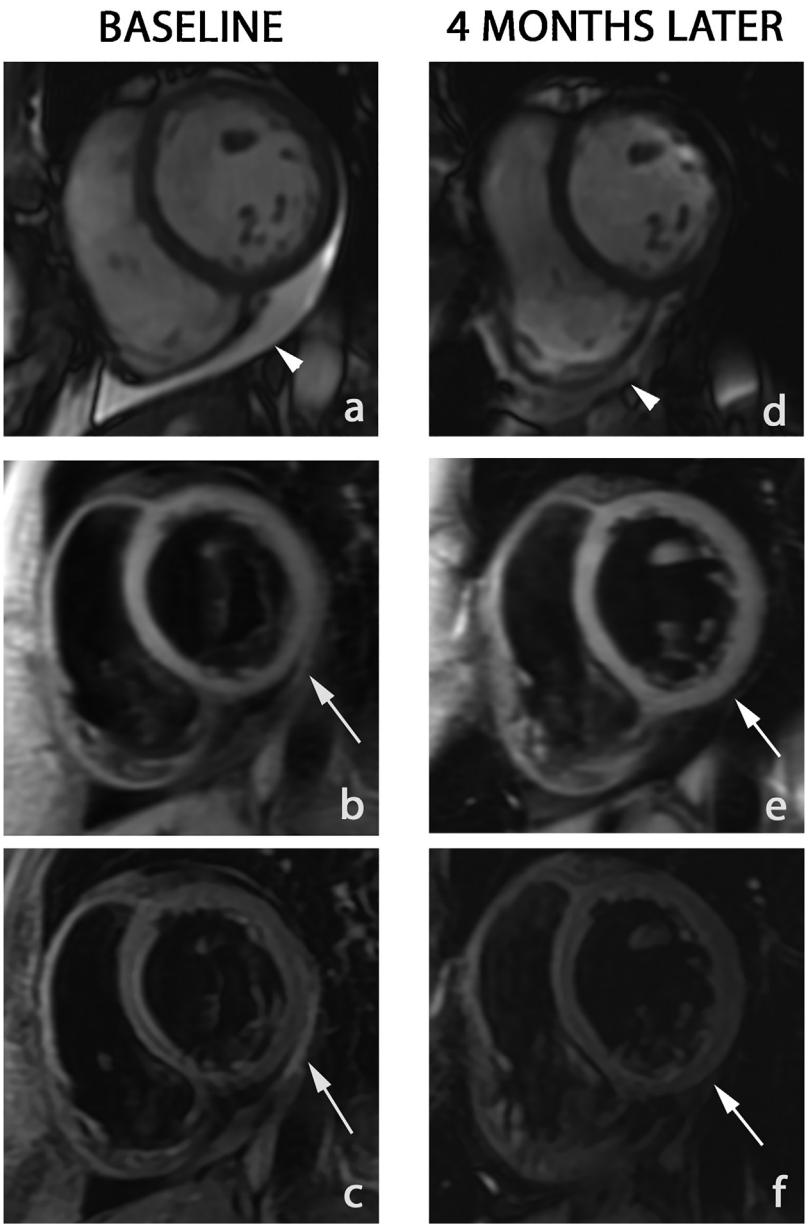

Fig. 2. Cardiac magnetic resonance imaging at baseline and 4 months after start of nomegestrol. Short axes SSFP cine sequences in end diastole showing significant decrease of pericardial effusion (arrowheads) between the baseline (a) and at four months (d). T1 (b) and T2 (c) weighted short axis view images with fat suppression, demonstrating pericardial thickening and hypersignal (white arrows) at baseline, disappearing 4 months after start of nomegestrol (e and f).

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