Successful treatment of subacute constrictive pericarditis with interleukin-1β receptor antagonist (anakinra)

Sirs,

Constrictive pericarditis (CP) is a rare complication after acute pericarditis (AP) (1). Anakinra, an Interleukin-1β (IL-1β) receptor antagonist, showed a dramatic effect in idiopathic cortico-dependent recurrent AP, supporting the hypothesis of a possible autoinflammatory origin of this disease (2-6).

A 47-year-old woman with negligible medical history was admitted to the emergency department for AP: typical chest pain, fever, moderate pericardial effusion, and diffuse ST elevation at electrocardiogram. Treatment with ibuprofen 1800 mg daily was started, but a significant increase of the pericardial effusion was documented. Methylprednisolone 20 mg daily plus colchicine 1 mg and antibiotics was began and pericardiocentesis with evacuation of 900 cc of purulent liquid was performed: it was sterile and no specific infectious etiologies were detected. One month later, fever and pain had disappeared, while the patient developed dyspnea and severe peripheral congestion. Echocardiography showed septal bounce and a significant extent of respiratory variation in mitral inflow E velocity suggestive of CP (Fig. 1), which was confirmed at cardiac resonance magnetic imaging (cRMI) that also showed pericardial inflammation. Heart catheterisation displayed equalisation of biventricular diastolic pressures with typical dip and plateau pattern. Positron emission tomography showed clear pericardial uptake with a maximum standard uptake value (SUV) of 2.91 (Fig. 2). C reactive protein was 10 mg/dl (n.v <1). Antinuclear antibodies (ANA), anti extractable nuclear antigens (ENA), anti-DNA, anti-neutrophil cytoplasmic antibodies (ANCAs) and anti-phospholipid antibodies were negative. IL-1β determined by immunoenzymatic methods was 78.8 pg/ml (n.v <3.9) and all the cultures were negative. We attempted to blunt pericardial inflammation with high dose intravenous corticosteroids plus indomethacin, but these therapies caused an abrupt and frightening water retention. Colchicine was continued and anakinra was added at the dosage of 100 mg daily subcutaneously. After 15 days of treatment, a significant improvement in echocardiographic parameters was obtained. After three months, a complete resolution of constriction was documented at cRMI (Fig. 3) and at echocardiogram. After 6 months Anakinra was reduced with a very gradual tapering: -100 mg/week every month. After 11 months of follow-up, at the time of this writing the patient is in optimal clinical conditions, discontinued anakinra two months ago and she is only on colchicine, with no sign of recurrence of constriction. Total cost of anakinra treatment was 6260 euros.

AP may rarely evolve in CP and constriction may rarely be transient (1). Interestingly we observed that not only detection of inflammation at cRMI, as already reported (7), but also positron emission tomography uptake (never reported so far) may help in

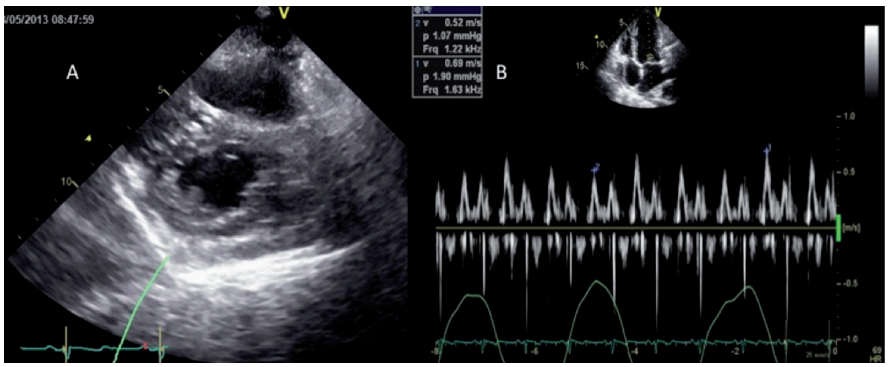

Fig. 1. Panel A, two dimensional echocardiographic view of interventricular septal bounce suggestive of constrictive pericarditis. Panel B, significant extent of respiratory variation in mitral inflow E velocity.

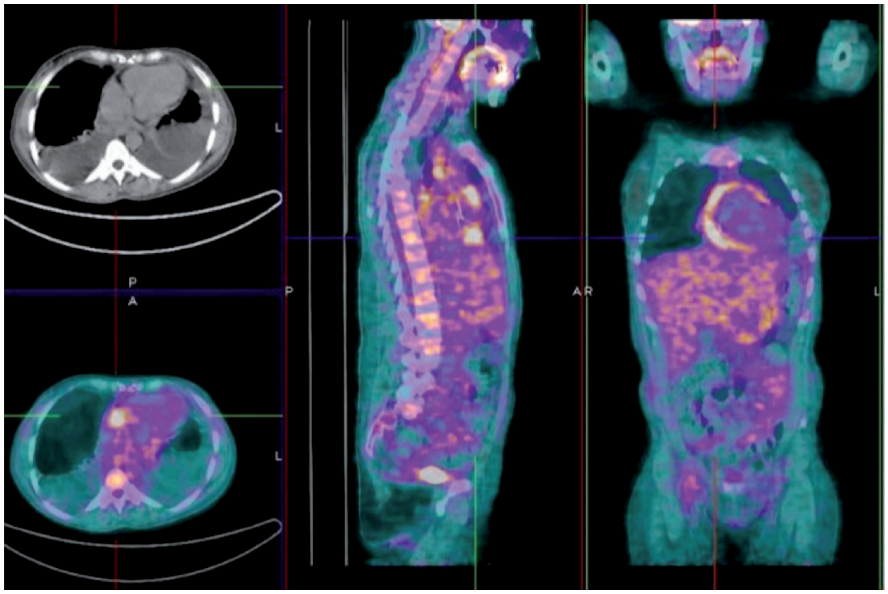

Fig. 2. Evidence of clear pericardial uptake with a high SUV at positron emission tomography.

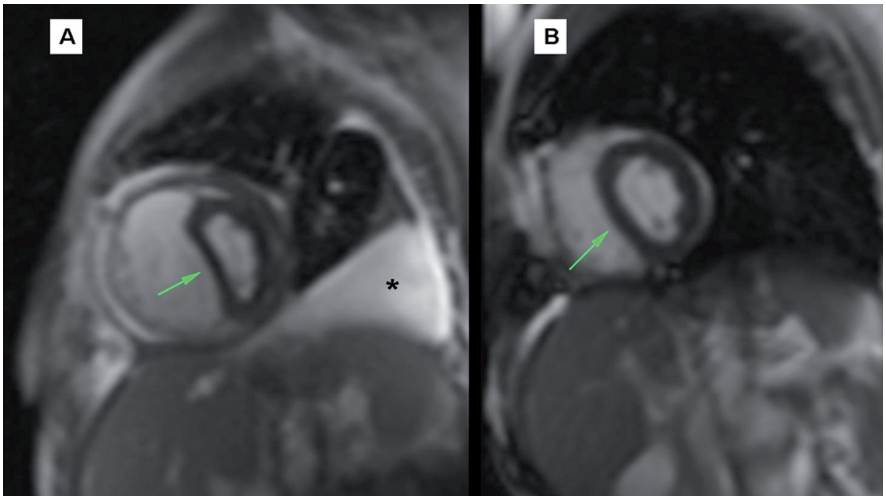

Fig. 3. Mid-ventricular short-axis free-breathing real time cine-images, inspiratory still frames. Panel A, acute phase. Evident septal bouce (arrow), indicating pathologic interventricular coupling, characteristic of pericardial constriction. Significant pleural effusion is associated (asterisk). Panel B, follow-up scan at three months. Septal bounce is no longer evident. Pleural effusion has resolved.

assess potential reversibility of pericardial constriction. It is assumed that anti-inflammatory therapies and corticosteroids may facilitate the resolution of transient CP, but they may also worsen fluid retention and increase surgical risk in case of pericardiectomy. In AP rapidly evolving into constriction, anti IL-1β drugs may be very useful, added to colchicine, which implicates IL-1β is a mediator of CP (8).

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