

Original article

Can troponin elevation predict worse prognosis in patients with acute pericarditis?

L'élévation de la troponine est-elle un marqueur de pronostic péjoratif chez les patients atteints de péricardite aiguë ?

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Abstract

Introduction. – Myopericarditis are common in clinical practice: up to 15% of acute pericarditis have a significant myocardial involvement as assessed by biological markers. This prospective, bicentric study is aimed at describing a myopericarditis population, the clinical and MRI follow-up, and search for prognosis markers.

Patients and methods. – Between May 2005 and September 2007, 103 patients hospitalised for acute pericarditis were prospectively enrolled. Physical examination, ECG, echocardiography, biological screening and cardiac MRI, in case of myopericarditis defined as acute pericarditis with troponin I elevation, were performed. Between December 2007 and July 2008, patients were contacted for new clinical and MRI evaluation.

Results. – Among the initial population of 103 patients admitted for acute pericarditis, 14 myopericarditis and 38 pericarditis were included. Compared with pericarditis, the myopericarditis group was associated with the following features: younger age (34.9 years [95% CI 28.3–41.2]; $p=0.01$), ST-segment elevation (nine patients between 14; $p=0.03$), higher troponin I (7.3 $\mu\text{g/L}$ [95% CI 4.4–10.2]; $p<10^{-4}$) and lower systemic inflammation (CRP peak 38.1 mg/L [95% CI 7–69.2]; $p=0.01$). In the case of myopericarditis, infectious etiologies were predominant (12 patients among 14; $p=0.002$) and patients stayed longer in hospital (5.8 days [95% CI 4.7–6.8]; $p=0.01$). Follow-up showed no difference in terms of functional status ($p=0.3$) and global complications ($p=0.9$) between paired myopericarditis and pericarditis. Nevertheless, cardiac mortality was higher for myopericarditis ($p=0.04$). MRI follow-up showed myocardial sequelae without clinical impact.

Conclusion. – Myopericarditis significantly distinguished from pericarditis. Three years follow-up showed no difference in terms of global complications but a higher cardiac mortality for myopericarditis. MRI myocardial lesions did not develop into symptomatic sequelae.

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Keywords: Acute pericarditis; Troponin; Myopericarditis; MRI; Prognostic marker

Résumé

Introduction. – Les myopéricardites sont fréquentes en pratique quotidienne : jusqu'à 15 % des péricardites aiguës présentent une modification significative des marqueurs biologiques de souffrance myocardique. Cette étude prospective visait à décrire une population de myopéricardites, chercher des marqueurs pronostiques cliniques et envisager un suivi par IRM.

Patients et méthodes. – Entre mai 2005 et septembre 2007, 103 patients hospitalisés pour péricardite aiguë ont été prospectivement inclus. On réalisait l'examen clinique, l'ECG, l'échocardiographie, la biologie et l'IRM en cas de myopéricardite (définies comme des péricardites avec élévation de la troponine). Entre décembre 2007 et juillet 2008, les patients étaient recontactés pour réévaluation clinique et si possible par IRM.

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Résultats. – Parmi la population initiale de 103 patients admis pour péricardite aiguë, 14 myopéricardites ont été inclus. Comparées aux péricardites, les myopéricardites (définies sur l'élévation de la troponine I [7,3 µg/L {95 % IC 4,4–10,2} ; $p < 10^{-4}$]) étaient associées à un plus jeune âge (34,9 ans [95 % IC 28,3–41,2] ; $p = 0,01$), une élévation du segment ST (neuf patients parmi 14 ; $p = 0,03$) et une moindre inflammation (pic de CRP à 38,1 mg/L [95 % IC 7–69,2] ; $p = 0,01$). En cas de myopéricardite, les étiologies infectieuses étaient majoritaires (12 patients sur 14, $p = 0,002$) et les patients restaient plus longtemps hospitalisés (5,8 jours [95 % IC 4,7–6,8] ; $p = 0,01$). Le suivi ne montrait pas de différences entre péricardites et myopéricardites sur le plan fonctionnel ($p = 0,3$) et des complications globales ($p = 0,9$). Cependant, la mortalité cardiaque était plus haute pour les patients avec myopéricardite ($p = 0,04$). L'IRM montrait au cours du suivi principalement des séquelles myocardiques sans traduction clinique.

Conclusion. – Les myopéricardites et les péricardites diffèrent significativement par plusieurs points. Un suivi de trois ans n'a pas montré de différence de pronostic fonctionnel, mais une mortalité significativement plus élevée dans le groupe myopéricardite. Les lésions myocardiques mises en évidence en IRM semblent évoluer vers des séquelles tissulaires fixées, dont la relation avec le pronostic reste à définir.

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Mots clés : Péricardite aiguë ; Troponine ; Myopéricardite ; IRM ; Marqueur pronostique

1. Introduction

Acute pericarditis is a common disorder in several clinical settings and may be the first manifestation of an underlying systemic disease [1,2]. Epidemiologic studies are lacking and the exact incidence and prevalence are unknown. Acute pericarditis is recorded in about 0.1% of hospitalised patients and 5% of those admitted to the Emergency Department for non-acute myocardial infarction chest pain [2]. Moreover, an autopsy prevalence from 1 to 6% has been reported and thus acute pericarditis may be frequently subclinical [3–5].

Although the positive diagnosis of acute pericarditis in a young patient with typical chest pain is usually easy, identifying the etiology may be more difficult [1,4–9]. This explains that, in clinical practice, most of the acute pericarditis are called idiopathic without any etiological investigation [4]. Centres using invasive techniques of sampling and analysis of pericardial fluid and tissues increase the likelihood of identifying a specific etiology to 70% [4,10,11]. This approach includes systematic use of pericardiocentesis and drainage with biopsy in order to perform examination of pericardial fluid (biochemistry, cytology, anatomopathology) and tissue (polymerase chain reaction, immunohistochemistry). The 30% left, called “idiopathic”, may be due to viral infection and associated with sarcolemmal antibodies [4]. Thus, some authors advocate the hospitalisation of patients with acute pericarditis in order to determine etiology, begin treatment and avoid complications [8]. On the contrary, in clinical practice, etiological search is rarely performed and often fruitless. Most of the acute pericarditis have a benign course after empirical administration of an NSAID. Probably, the most appropriate approach represents a compromise between performing too many unnecessary invasive studies and missing too many specific diagnoses.

The 2004 European guidelines [8] advocate the search for frequent causes that can benefit of specific and early treatment. Infectious diseases, and among them HIV, are commonly implicated [4,12,3]. Non-infectious diseases can be subdivided into autoimmune, neoplastic, traumatic and metabolic causes. Systemic autoimmune etiologies mainly include systemic lupus erythematosus, rheumatoid arthritis and systemic sclerosis, while the commonest metabolic etiologies are ure-

mia and myxedema. Secondary metastatic tumours, above all breast and lung, or hematological cancers like lymphoma are also frequent. Finally, some traumatic etiologies are growing, notably secondary pericarditis due to percutaneous interventions and radiation therapy [4].

Although corticosteroids have been shown to be an independent risk factor for pericarditis recurrences [13], there are few established criteria allowing the selection of patients at high risk of a specific etiology or complication. Our study deals with that problematic search for prognostic markers in acute pericarditis. We studied a particular cohort of acute pericarditis, myopericarditis, defined as pericarditis with cardiac troponin I (TnI) elevation. The principal objective was to determine whether that troponin elevation was a poor prognosis risk factor and if it was associated with other supposed poor prognostic predictors. Secondary objectives were to determine the characteristics, clinical and MRI evolution, and prognosis of a myopericarditis population.

2. Patients and methods

This study, for the most prospective (inclusion, follow-up) and retrospective (part of the data collection), was performed from December 2007 to July 2008.

2.1. Patients

Between May 2005 and September 2007, all the cases of acute pericarditis hospitalised in Cardiology Departments from two hospitals were prospectively enrolled. Initial evaluation included ECG, chest X-ray, echocardiography (TTE), standardized laboratory tests (cardiac enzymes, blood cell count, C reactive protein, serum urea and creatinine), as well as etiological search (autoimmunity, infection, neoplasia). This first study [14] showed that acute pericarditis (patients) were a heterogeneous population and that a combined management between cardiologists and internists aimed to diagnose earlier curable diseases. For the present study, patients have been contacted at a mean of 20 months after the first myopericarditis episode for a clinical and MRI follow-up.

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