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EDITORIAL

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Focus issue on cardiomyopathies

This issue of Acta Cardiologica is devoted to the diagnostis and management of myocardial disease in the context of inflammatory disorders, anti-cancer treatment, and COVID-19 vaccination.

Sarcoidosis is a rare disease caused by inflammation. It usually occurs in the lungs and lymph nodes, but it can occur in almost any organ. The most common clinical manifestations of cardiac sarcoidosis include heart block, atrial arrhythmias, ventricular arrhythmias and heart failure [1].

Diagnosis of cardiac sarcoidosis can be difficult given the patchy myocardial infiltration, but can be aided by the use of advanced cardiac imaging such as cardiac magnetic resonance (CMR) [2]. CMR is recommended and frequently used for the diagnosis and prognostication of patients with suspected cardiac sarcoidosis. Cardiac damage identified as late gadolinium enhancement (LGE) has been associated with ventricular arrhythmic events. LGE in these patients has been described in a variety of patterns, including subendocardial, patchy intramural, midmyocardial, and isolated lateral wall involvement. Bazoukis et al. reported in elegant review the existing evidence regarding the association of LGE with adverse events and especially with fatal ventricular arrhythmias in patients with cardiac sarcoidosis [3].

Both size and function of the left atrium (LA) are powerful prognostic markers in a variety of clinical conditions. The LA plays a pivotal role in stroke volume by modulating left ventricular filling with its reservoir, conduit, and contractile functions. Echocardiography is the imaging technique of first choice to assess LA structure and function due to its availability, accessibility and safety. 3 D echocardiography can better define the complex anatomy of LA with less geometric assumptions than 2 D approach. In their cross-sectional study concerning 44 asymptomatic patients with sarcoidosis and 40 age and sex healthy volunteers, Solmaz et al. showed that 3 D-echocardiography derived LA function parameters were significantly impaired in the sarcoidosis group [4]. Andreoli et al. reported the case of a young patient presenting with complete AV block as the first manifestation of sarcoidosis [5]. Unlike CMR, which was normal, the diagnosis of systemic sarcoidosis with cardiac involvement was made by an FDG-PET, this allowed the clinicians to start corticosteroid therapy and later infliximab due to evidence of FDG uptake in new areas of the left ventricle.

Cardiac amyloidosis is a progressive infiltrative disease that causes myocardial thickening and dysfunction. Three main types of amyloidosis associated with cardiac involvement are acknowledged: light chain (AL), familial or senile (ATTR) and secondary amyloidosis (AA). The diagnosis is suggested in the presence of cardiac or extracardiac red flags and/or in specific clinical situations and confirmed by the use of bone scintigraphy coupled to assessment for monoclonal proteins [2,6]. Debonnaire et al. reported the trends in diagnosis, referral routes, clinical presentation, early onset diagnostic red flags and outcome in 139 de novo cardiac amyloidosis subjects recruited over a 8-year period in a tertiary referral hospital [7]. ATTR (82%) was the most common cardiac amyloidosis form. Increased awareness over time led to a marked ATTR diagnostic surge, steep non-invasive diagnostic approach increment and increased nuclear medicine and external cardiologist referrals. However, although cardiac amyloidosis diagnostic uptake and referral improve, specialist-specific disease and diagnostic red flag ignorance result in non-timely diagnosis and unfavourable outcome [7]. Left ventricular mass index (LVMI) provides quantitative information on left ventricular structure. In their multicentre, national, observational study including 886 patients, Kis et al. showed that the rate of LV hypertrophy of unknown cause was high (18.8%) and that Fabry disease and cardiac amyloidosis should be considered primarily in this patient group [8]. Huang et al. reported the clinical and echocardiographic features of 99 patients with newly diagnosed AL amyloidosis. They showed that LVMI (cut-off of 113.4 g/m^2) is a reliable prognostic indicator of survival in AL amyloidosis [9].

Inflammation and autoimmunity related ischaemic and nonischemic complications can occur in various inflammatory disease and can cause cardiac damage. Subtle myocardial alterations cannot often be identified using conventional imaging technique. In this context, the use of 2 D speckle tracking strain imaging can help identify subclinical myocardial involvement. Sade et al. in their editorial [10] referring to the article of Sunbul et al. [11] pointed out that the presence of LV myocardial dysfunction was more prominent in Behçet's syndrome patients with neurologic involvement and could only be demonstrated with the use of 2 D speckle tracking echocardiography.

Breast cancer is the most frequent cancer in women, and anthracyclines remains the cornerstone of treatment. Unfortunately, cardiotoxicty induced by anthracyclines is a major drawback of anticancer therapies. Anthracycline-induced cardiotoxicity is more commonly seen in patients with cardiovascular risk factors although it also occurs in patients without cardiovascular risk factors and disease. To evaluate the role of molecular and genetic factors in development of anthracycline-induced cardiotoxicity, Kopeva et al. examined 176 women with breast cancer without cardiovascular diseases. The authors reported that evaluation of polymorphisms gene of p53, NOS3 and NADPH oxidase genes could be recommended before chemotherapy in women with breast cancer and without cardiovascular disease for the risk assessment of anthracycline-induced cardiotoxicity development [12].

Takotsubo cardiomyopathy also known as stress cardiomyopathy or 'Broken Heart Syndrome', is a type of non-ischaemic cardiomyopathy characterised by transient dysfunction and ballooning of the left ventricle of the heart. Konsek-Komorowska et al. reported a case of takotsubo cardiomyopathy occurring after intravenous administration of a single dose of flecainide in a 30-year-old woman with a medical history of episodes of focal atrial tachycardia [13].

Vaccination against COVID-19 provides clear public health benefits, but vaccination also carries potential risk of myocarditis. Myocarditis is an inflammatory disease of the myocardium, that might lead to reduced cardiac function and in the most severe cases to death. CMR is an important complementary tool to echocardiography for exploring myocardial damage by assessing perfusion and extracellular compartment. Van Kerkhove et al. reported one of the first report of myocarditis following ChAdOx1 vaccination, a mRNA vaccines [14]. Ojha V et al. also through a case reported the added value of CMR to detect myocarditis in the context of COVID-19 vaccine [15].

Interistingly, ageing may represent an independent risk factor for the occurrence and development of myocardial fibrosis. Song et al. using a rat model, showed that during ageing, myocardial fibroblasts are activated, accompanied by an increase in extracellular matrix deposition. The inflammation mediated by AMPK/Sirt1/NF-κB signalling pathway is closely positively correlated with the activation of myocardial fibroblasts and the progression of myocardial fibrosis [16].

De Turck et al. reported a case of 46-year-old male bodybuilder with nonischemic systolic heart failure complicated with a large LV thrombus and multiple emboli presumably caused by long-term abuse of anabolic steroids [17].

Disclosure statement

No potential conflict of interest was reported by the author(s).

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