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Editorial

Pericardial effusion in infective endocarditis: The times they are a-changin'

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Infective endocarditis (IE) is one of the richest infectious diseases in terms of pathophysiology, epidemiology, clinical presentation, and management [1]. As appropriately outlined in the 2015 guidelines of the European Society of Cardiology [2], patients with IE require a broad range of expertise, ideally formalized as an endocarditis team: A multidisciplinary group with different tasks, including the participation to national or international registries, to contribute to medical progress. The study on risk factors for pericardial effusion in native valve IE and its influence on outcome, by Regueiro A et al., in this issue of the International Journal of Cardiology [3], nicely illustrates the benefits of multicenter prospective cohort studies to better characterize this puzzling disease, and monitor its never-ending evolution.

To shed light on the meaning of pericardial effusion during native valve IE, they analyzed data from a large multicenter prospective cohort study, with an impressive number of 1205 consecutive cases of native valve IE enrolled during years 2007–2013 in Spain. They found that echocardiogram on admission revealed pericardial effusion in only 7.8% of patients (n = 94), mostly (93.6%) mild-to-moderate, and that pericardial effusion was associated with a higher risk of heart failure on admission (OR 1.9, CI 95% 1.2–3.0), but not with mortality, neither in-hospital, nor at one year [3]. These data are quite reassuring, as compared to the largest study previously available on this issue, from the same group, and with a similar design: Of 479 episodes of IE enrolled between 1990 and 2007 in a referral center, 25% (118) had pericardial effusion on admission, and mortality was much higher in patients with large-to-very large pericardial effusion (56%), as compared to patients with small-to-moderate, or no pericardial effusion (respectively, 18%, and 24%) [4].

These discrepancies between two studies performed in the same country, by the same group, with similar study design, are probably largely explained by the followings. Firstly, the profile of IE has dramatically changed over the last decades: Although it used to be a protracted infectious disease, mostly related to oral streptococci, in young or middle-aged adults, often diagnosed after several weeks of low grade-fever, contemporary studies showed that *Staphylococcus aureus* has become the public enemy #1, and that IE is often health care-associated, of acute onset, in elderly patients with major comorbidities, and degenerative valvular disease [5–7]. As the profile of IE has changed, the prevalence, and the meaning of clinical or echocardiographic signs have changed. Secondly, the first study was restricted to one center, the Hospital Clinic in Barcelona, Spain, one of the first, of the largest and of the most famous referral center for IE in the world, with a combination of all the expertise required (e.g. cardiologists, ID physicians, and cardiac surgeons experts in surgery for IE), working as an endocarditis team long before the concept was first mentioned in the medical literature. Hence, the referral bias, as documented by a landmark study from the International Collaboration on Endocarditis (ICE) group [8], may explain why pericardial effusion was more common, and had a prognostic value, in one referral center, while its prevalence was >3 times lower (i.e. 7.8% vs. 25%), and was not associated with prognosis, in a larger study performed in 25 centers.

Prospective cohort studies are sometimes considered as low-level science, due to their observational design, in the modern era of evidence-based medicine, which dictates that data are of limited value if not originating from randomized controlled trials. As a consequence, funding opportunities for prospective cohort studies have been dramatically reduced, both at national and international levels, despite the large amount of data collected through these observational studies over years. However, the changing profile of IE, and its consequences in terms of diagnosis, and management, would have been missed without these prospective cohort studies, that have been instrumental to adapt the diagnostic workout, and the empirical treatment of patients suspected of IE in international guidelines. Given the complexity of IE, the broad range of expertise required for optimal management of this puzzling disease, and the fast evolution of major parameters, including the host (ageing, with more comorbidities), the source (increasingly healthcare-related), and the pathogens (with the emergence of multidrug-resistance), prospective and standardized collection of data, at a large scale, are of utmost importance to ensure that we monitor

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changes in IE profile, and adapt our diagnostic and therapeutic strategies. Colleagues and friends from the Spanish Collaboration on Endocarditis, the 'GAMES' (Grupo de Apoyo al Manejo de la Endocarditis en España), should be commended for their ongoing efforts to decipher the contemporary characteristics of IE, and keep us updated in significant evolution. Authors of the recent ESC guidelines should also be commended for their definition of the major roles of an 'endocarditis team', which include the participation to national or international registries, to contribute to medical progress. Governmental and non-governmental research agencies should maintain a dedicated mechanism to provide funding for observational studies on IE, as these are instrumental to adjust guidelines, and, finally, to guarantee optimal care for patients with IE over time.

Conflicts of interest

None.

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