The Pathology of Lone Atrial Fibrillation

One atrial fibrillation (AF) is AF in the absence of structural heart disease. Persistent lone AF is a paroxysm that does not spontaneously resolve. The article by Paraskevaidis et al in this issue of CHEST (see page 488) concerns the use of echocardiography to predict the successful cardioversion of persistent lone AF and, perhaps more importantly, the maintenance of sinus rhythm. To accomplish this, the authors used a relatively new echocardiographic measurement, the absence of a “notch” in the early systolic mitral annulus motion (if you will, the absence of NESMAM). Keep in mind that left atrial enlargement and other previously described echocardiographic predictors of the maintenance of sinus rhythm measure cardiac structure, and that structural disease is absent by definition in patients with lone AF. Left atrial appendage flow velocity has been used but is based on data from a population that has or is at risk for structural disease.

Is the use of cardioversion in patients with persistent lone AF warranted in the first place? There is a risk using antiarrhythmic drugs. Cardioversion to sinus rhythm has not reduced the incidence of subsequent thromboembolism compared to anticoagulation therapy. Even palpitations are generally not worrisome (except perhaps to the physician), and quality of life is not improved by treatment to maintain sinus rhythm. Presumably, the inauspicious results of treatment are because the treatment is not a “permanent fix,” and paroxysms of AF are not 100% eliminated. However, treatment would make more sense if one could predict which individuals would receive a permanent fix with cardioversion for the treatment of AF.

The idea that we can identify patients who better respond to treatment would seem to make the diagnosis of lone AF an oxymoron, because the term lone implies no distinguishing features: the AF stands alone. The duration of AF is generally not useful to consider in this regard (it was not in this study) because patients with persistent lone AF usually present for treatment rather soon after onset of the condition. Otherwise, the classic indications that AF will recur subsequent to cardioversion, such as left atrial size, depend on a structural change. Yet, Paraskevaidis et al have suggested that we can predict who will benefit in the long term from cardioversion of lone AF by Doppler interrogation of the left atrial appendage and analysis of mitral annulus motion on M-mode echocardiography. A flow velocity of > 20 cm/s was useful. More importantly, often in AF (in two thirds of their lone AF patients) there is NESMAM. The notch was seen in 88% of patients who went on to revert to AF after undergoing cardioversion but was absent in 90% of those who remained in sinus rhythm at the 1-year follow-up. The data of Paraskevaidis et al require confirmation but would clarify an otherwise confusing and controversial issue regarding the selection of patients with lone AF for cardioversion. It would be even more exciting to learn whether the absence of NESMAM predicts the maintenance of sinus rhythm in a population of patients who have undergone cardioversion but were then not treated with antiar-
rhythmic drugs, since often the presumed requirement for such drugs discourages cardioversion.

The explanation for NESMAM is obscure. The abnormal annulus motion coincides with the timing of atrial relaxation had there been a sinus rhythm. A stiff atrium may relate, for example, to the loss of myofibrils, to collagen formation, or to interstitial fibrosis. Indeed, this pathologic process may not reflect a causative disease per se but rather an adaptive process reflecting the duration of the AF (so-called remodeling). These processes coincide with the electrophysiologic remodeling that explains why AF more often recurs or is more easily induced after there has been faster or longer lasting arrhythmia (“AF begets AF”), albeit these could be independent processes. It is further confusing that lone AF with a chronic uncontrolled ventricular response could cause tachycardia-induced cardiomyopathy. Is the AF then to be called lone AF?

In sum, it is unclear whether NESMAM identifies lone AF patients who indeed have structural changes that require further elucidation (and, technically, do not have lone AF) or whether AF itself causes the structural changes that lead to NESMAM, predisposing the patient to recurrence. Thus, the work of Paraskevaidis et al should not only stimulate confirmation of this practical guide to cardioversion but also investigation into better explanations for the occurrence of apparent lone AF.

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Is There a Role for Routine Surveillance Endotracheal Aspirate Cultures in the Treatment of BAL-Confirmed Ventilator-Associated Pneumonia?

Ventilator-associated pneumonia (VAP) is the major cause of infection in critically ill patients who are receiving mechanical ventilation, with a prevalence of 8 to 28%, and is one of the leading causes of death from hospital-acquired infections in critical care units. VAP is also associated with prolonged hospitalization and increased health-care costs. There is no doubt that the diagnosis of VAP remains one of the most controversial and challenging topics in the management of patients receiving mechanical ventilation. In general, the most acceptable standards for the diagnosis of VAP require quantitative cultures of BAL fluid or protected specimen brush (PSB) samples. Using 10^6 cfu/mL as the interpretive cutoff point for respiratory secretion cultures from endotracheal aspirates (EAs) has a comparable accuracy compared to that with the PSB technique, with a higher sensitivity (82%) and a lower specificity (83%). However, as soon as a lower threshold is used, specificity declined significantly. Irrespective of which standard is chosen, there is still an inherent delay from the time the BAL fluid, PSB, or EA specimen was obtained to the availability of the culture reports. In practice, patients who are suspected to have VAP would be started on empiric therapy pending culture results.

The main problem in dealing with patients who have a high clinical suspicion of VAP is the striking of a balance between avoiding a delay in initiating appropriate antibiotic therapy and reducing the inappropriate use of broad-spectrum antibiotics. Patients who are initially treated inadequately had poorer outcomes than those who received adequate antibiotic coverage at the beginning. Thus, in clinical practice, initial broad-spectrum antibiotic therapy in patients in whom there...