



Figure. A: Hematoxylin-eosin staining which shows a preacinar artery with cellular hypertrophy of the middle layer and large loss in lumen diameter (arrow). The upper box (Masson trichrome stain) shows another preacinar artery with plexiform changes. B: Hematoxylin-eosin staining of a preacinar artery with intimal thickening (arrow). The upper box (Masson trichrome stain) shows an intraacinar arteriole with muscle hypertrophy.

tend to drop over time and can even become normal. Additionally, the prognostic value of pulmonary biopsy is also unclear. The absence of fibrosis, as in our patients, may be a marker of reversibility. Pulmonary vasodilators and ventricular assistance have been shown to be useful as a bridge to eligibility in both adult and pediatric patients,⁶ as they allow transplantation in patients initially rejected due to pulmonary hypertension. This strategy may be preferable to cardiopulmonary transplantation.

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Nonvalvular Atrial Fibrillation: the Problem of an Undefined Definition



Fibrilación auricular no valvular: el problema de una definición indefinida

To the Editor,

The term *nonvalvular atrial fibrillation* (NVAF) is used with increasing frequency to describe patients who may benefit from new oral anticoagulants (NOACs). This is a cause for concern for us because the European guidelines for the management of atrial fibrillation, dated 2012,¹ state that “no uniform or satisfactory definition of these terms exists.” The indication for NOACs is based on 4 pivotal studies. To clarify this concept, we have reviewed the inclusion criteria in the protocols of these studies in terms of native valve lesions:

- The RE-LY study² did not include the term NVAF. Patients with “hemodynamically relevant valve disease” were excluded and, as far as we are aware, a more precise definition was not included.

- The ROCKET trial³ was the only study that included the term NVAF. However, the protocol only excluded patients with “hemodynamically significant” mitral valve stenosis. For the indication of rivaroxaban, atrial fibrillation with a valve lesion other than mitral valve stenosis would not be considered NVAF.
- The authors of the ARISTOTLE trial⁴ and ENGAGE AF-TIMI 48 trial⁵ did not use the term. Both these trials excluded only patients with moderate or severe mitral valve stenosis.

A patient with severe aortic stenosis or mitral valve regurgitation with atrial fibrillation would not have been excluded from 3 of the 4 pivotal trials due to valve lesions. It would appear striking and inconsistent to describe such a patient as having NVAF. With valve disease, generalizations are inappropriate. Thus, thromboembolism as a pathophysiologic mechanism for mitral stenosis cannot be considered similar to mitral valve regurgitation or pulmonary stenosis.

The use of a poorly defined term may lead to problems for certain therapeutic indications. To quantify the problem, we reviewed the echocardiography database of a secondary university hospital with no heart surgery facilities. In the last 6 months of

Table
Valve Lesions in 748 Patients With Atrial Fibrillation but Without Prostheses

	No. (%)
No lesion	5 (0.67)
Any grade VS or VR \geq grade II	587 (78.5)
Any grade VS or VR \geq grade III	472 (63.1)
Any grade MS	158 (21.1)
Moderate or severe MS	93 (12.4)

MS, mitral valve stenosis; VR, regurgitation of any valve; VS, stenosis of any valve.

2013, echocardiograms were recorded for 748 patients with atrial fibrillation but without a valve prosthesis, and with a CHADS₂ score of 1 or more. The patients with valve lesions are shown in the Table.

In terms of their valve lesions, 655 patients (87.6%) would correspond to the clinical profile of ARISTOTLE⁴ and ENGAGE AF-TIMI 48 trials.⁵ Between 590 and 655 (78.9% and 87.6%) would correspond to the ROCKET profile.³ It is more difficult to determine how many would correspond to the RE-LY profile² and how many would have NVAf. This would depend on the threshold for NVAf. If NVAf requires “hemodynamically relevant valve disease”, between 161 and 276 patients could be included (21.5%–36.9%). These notable differences highlight the weakness of the term NVAf when selecting patients for treatment with NOACs.

These data cannot be extrapolated to the general population because the patients were referred for echocardiography. Nevertheless, they may be representative of a large proportion of patients with different types of valve lesions and atrial fibrillation.

The authors of the ARISTOTLE trial reported that more than a quarter of the patients in the study had valve lesions that could be considered significant.⁶ In these patients, the benefit of apixaban was similar to that in patients without valve lesions. This finding may dissipate doubts about the risk of using NOACs, or at least apixaban, in patients with valve lesions other than mitral stenosis. In the ROCKET trial, 14% of the patients were considered to have significant valve lesions.

The clinical trials show that NOACs, or at least factor Xa antagonists, can be used in patients with atrial fibrillation who do not have mechanical prostheses^{2–5} or significant mitral valve stenosis,^{3–6} although they may have other valve lesions, whether or not they are significant. This point is essential, as atrial fibrillation is the most frequent sustained arrhythmia, while mitral valve stenosis is becoming less frequent. The term NVAf does not seem appropriate as an umbrella term for patients who may benefit from NOACs. Not only is this term not representative, but it is also not defined in the guidelines and may lead to inappropriate

and uneven clinical management in the indications for anti-coagulation. We are therefore of the opinion that this poorly defined term should not be used in this context.

CONFLICTS OF INTEREST

A. García Lledó has provided scientific advice to Bristol-Myers and Bayer and has given presentations and classes in courses sponsored by Pfizer and Boehringer.

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Percutaneous Closure of Baffle Leaks in Patients With Atrial Switch Operation for D-Transposition of the Great Arteries



Cierre percutáneo de comunicaciones interauriculares en pacientes con cirugía de switch auricular para la D-transposición de grandes arterias

To the Editor,

The atrial switch procedure (Senning or Mustard technique) was the surgical standard of care for patients with D-transposition of the great arteries during the 1970s and 1980s. This intervention

achieved redirection of systemic venous blood flow to the left ventricle (subpulmonary) and of the pulmonary venous flow to the right ventricle (systemic) by means of an atrial baffle. Interest in this topic is mainly due to the large number of patients currently being followed up after these interventions. The long-term complications of the atrial switch procedure are mainly related to right ventricular dysfunction, atrial bradyarrhythmias and tachyarrhythmias, pulmonary hypertension and baffle problems (leaks and/or obstructions).^{1,2} Baffle leaks have traditionally been surgically treated.^{3,4}

The main aim of our report is to describe the percutaneous approach for the treatment of baffle leaks and its clinical medium-term results in a tertiary hospital. From 2005 to 2012,