

# WHERE ARE WE WITH THE EUROBSERVATIONAL RESEARCH PROGRAMME IN 2018?

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Overall, 14 papers have been published in 2018 reporting information derived from ESC-EORP registries. A selection of the scientific production is reported below in different areas of cardiovascular diseases.

## HEART FAILURE

Heart failure and atrial fibrillation frequently coexist, atrial fibrillation being the most common arrhythmia in heart failure. Atrial fibrillation increases the risk of thromboembolic complications (particularly ischemic stroke) and may impair cardiac function, leading to worsening symptoms of heart failure. It is well known that an episode of heart failure precipitated by atrial fibrillation is generally associated with a more benign prognosis once atrial fibrillation is converted to sinus rhythm or heart rate is well under control. On the contrary, new-onset atrial fibrillation in a patient with established heart failure is associated with a worse outcome, probably because it is both a marker of a sicker patient and because it impairs cardiac function. Patients with chronic heart failure and permanent atrial fibrillation have a worse outcome than those in sinus rhythm, although this is largely explained by more advanced age and heart failure severity.

These concepts are valid for heart failure in general, but it is not clearly understood what the role of atrial fibrillation is in patients with heart failure and different levels of ejection fraction. An ad-hoc analysis of the EORP Heart Failure Long-Term registry was conducted on 14 964 patients to compare the characteristics and the 1-year prognostic role of atrial fibrillation among patients with HFREF (ejection fraction <40%), those with HFMEF (ejection fraction between 40% and 49%), and those with HFPEF (ejection fraction ≥50%).<sup>1</sup> The prevalence of atrial fibrillation was 26% in patients with HFREF, 29% in patients with HFMEF, and 39% in patients with HFPEF. Atrial fibrillation was associated with older age, reduced functional capacity and more severe physical signs of heart failure. Crude rates of mortality and heart failure hospitalization were higher in patients with atrial fibrillation compared with those in sinus rhythm, in each ejection fraction group. The multivariable analysis, adjusted for the most important confounding factors,

showed that atrial fibrillation was independently associated with a higher mortality in patients with HFPEF, while it was not in patients with HFREF and HFMEF. These findings were similar in both acute and chronic heart failure patients.

This analysis of the Heart Failure Long-Term registry showed that the prevalence of atrial fibrillation increases with increasing ejection fraction and that atrial fibrillation was associated with increased all-cause mortality only in patients with HFPEF and associated with heart failure hospitalizations only in patients with HFPEF and HFMEF. With a higher ejection fraction, atrial fibrillation may contribute to the progression of heart failure and worsen outcomes; whereas, with a lower ejection fraction, atrial fibrillation may be more of a bystander, where heart failure itself and its severity determine the outcomes.

### ATRIAL FIBRILLATION

The role of sex and body weight on the outcomes of patients with atrial fibrillation is not completely understood. An analysis of the EORP AF Long-Term registry tried to clarify these open issues in a large population of “real-world” patients with atrial fibrillation.<sup>2</sup> Among 2540 atrial fibrillation patients (38.9% female; median age, 69) with 1-year follow-up data available, 28.3% had a normal BMI, 42.7% were overweight, and 29.0% were obese. Obese patients were younger and with a more prevalent history of diabetes mellitus and hypertension ( $P<0.001$ ). The study showed that all-cause mortality was significantly different according to BMI among female patients (normal BMI, 9.3%; overweight, 5.3%; obese, 4.3%;  $P=0.023$ ), but not among male patients ( $P=0.748$ ). The composite outcome of thromboembolic events and death was also significantly different, as it was lower in obese females ( $P=0.035$ ). Among males, bleeding events were significantly more frequent in obese patients ( $P=0.035$ ). The multivariable Cox analysis, adjusted for the most relevant confounding factors, showed that BMI was not independently associated with all-cause mortality.

Another registry, the Atrial Fibrillation Ablation Long-Term registry (AFA-LT), was analyzed in an attempt to answer a relevant question<sup>3</sup>: how are patients managed during the 1-year follow-up period after atrial fibrillation ablation? A follow-up visit was not performed systematically in all patients: of the 3593 who underwent an ablation procedure, 1-year follow-up was performed in 3180 (88.6%), with 52.8% being conducted by clinical visit, 44.2% by telephone contact, and 3.0% by contact with the general practitioner. The absence of an appropriate assessment following the procedure is surely a gap in clinical practice. The number of clinical visits and, even more importantly, of cardiac rhythm monitoring was shown to be at least suboptimal. In this context, with respect to the arrhythmia, 34.2% had a documented recurrence of atrial arrhythmia during the 12-month follow-up period. Recurrences were more frequent in persistent (39.8%) and long-

standing persistent (43.7%) than in paroxysmal atrial fibrillation (31.4%) ( $P < 0.0001$ ). Recurrences were mainly due to atrial fibrillation (29.0%), while only a minority of cases suffered an atypical atrial flutter or tachycardia (5.5%). At the follow-up visit, 45.5% of patients were still treated with an anti-arrhythmic drug and two-thirds were on oral anticoagulation. Insufficient guideline adherence to anticoagulation management was observed, since 26.5% of patients with  $\text{CHA}_2\text{DS}_2\text{-VASc} \geq 2$  were not receiving anticoagulation. The AFA-LT registry showed that a more structured and systematic rhythm monitoring and a more appropriate prevention of thromboembolic events with oral anticoagulants are needed to improve the outcome of these patients undergoing atrial fibrillation ablation.

## **CHRONIC ISCHEMIC CARDIOVASCULAR DISEASE**

The 6-month follow-up of the Chronic Ischemic Cardiovascular Disease ESC Pilot registry was also published in 2018.<sup>4</sup> The results suggest that more effort should be directed into improving the best practices in agreement with the current guidelines. The rate of relevant clinical events during this medium-term follow-up was surprisingly high: of the 2203 patients considered for the analysis, 2.6% died (the majority of fatal events were cardiovascular) and 22.5% were hospitalized for any cause, mostly for cardiovascular causes (18.4%). The composite of all-cause death or all-cause rehospitalization occurred in 23.7% of the patients and the composite of cardiovascular death or cardiovascular hospitalization occurred in 19.5%.

Independent predictors of all-cause mortality/hospitalization were age, a history of previous peripheral revascularization, chronic kidney disease, or chronic obstructive pulmonary disease. During the follow-up period, while a reduction in the rate of prescriptions for statins was not observed, a decrease in the rate of prescriptions for ACE inhibitors, angiotensin receptor blockers,  $\beta$ -blockers, and aspirin was reported. This observation can explain, at least in part, the high rate of clinical events observed in the medium-term period of the follow-up. The conclusion is that, in this contemporary European registry of patients with chronic ischemic cardiovascular disease, the rate of severe clinical outcomes at 6 months was high and was mainly influenced by age and comorbidities. The medical management of chronic ischemic cardiovascular disease was suboptimal, emphasizing the need for ad-hoc programs aimed at implementing guideline adherence and follow-up procedures in order to improve quality of care and, as a consequence, patient outcomes.

## **CARDIOMYOPATHIES**

The Cardiomyopathy Registry of the EURObservational Research Programme is a prospective, observational, and multinational registry of consecutive patients with four cardiomyopathy subtypes: hypertrophic cardiomyopathy, dilated

cardiomyopathy, arrhythmogenic right ventricular cardiomyopathy, and restrictive cardiomyopathy. In 2018, the baseline characteristics and the management of the 3208 patients enrolled in the registry were published.<sup>5</sup> The most common diagnosis was hypertrophic cardiomyopathy (54.2%), then dilated cardiomyopathy (39.3%), arrhythmogenic right ventricular cardiomyopathy (4.4%), and restrictive cardiomyopathy (2.1%). In addition, left ventricular noncompaction was reported in 4.1% of all patients.

$\beta$ -Blockers were the most frequently prescribed drugs (80.6% of all patients). Implantable cardioverter defibrillators were reported in a high rate of cases (25.9% of the whole population; 81.4% for primary prophylaxis), most frequently, as expected, in patients with arrhythmogenic right ventricular cardiomyopathy (56.6% of patients) followed by dilated cardiomyopathy (31.7%), hypertrophic cardiomyopathy (19.9%), and restrictive cardiomyopathy (9.1%). These findings document the burden of life-threatening arrhythmias in these clinical conditions. A pacemaker was implanted in 10.2% of the whole cohort, most frequently in patients with dilated cardiomyopathy (14.3%) and least frequently in arrhythmogenic right ventricular cardiomyopathy (2.8%).

The study clearly shows the diversity and the different frequency of diagnostic tests that were performed in the various areas of Europe for assessment of the cardiomyopathy, management of symptoms, or stratification of risk. This is also clearly documented by the rate of use of MRI, performed in nearly one-third of all patients, or by genetic testing, performed in about one-third of patients. The large differences observed among the various geographic areas suggest that comparing the organization of health care systems for cardiomyopathies in the various countries may provide valuable insights that can be used to improve health care services in Europe. Since recommendations or expert consensus for the management of the patients and their families are now available, it can be hypothesized that variations in service provision are mostly related to economical or structural reasons than to the clinical knowledge of health care professionals dealing with these clinical conditions.

## **PREGNANCY IN CARDIAC DISEASE**

The ROPAC registry is one of the most productive registries of EORP. In 2018, a paper describing the story of pregnant women with rheumatic mitral valve disease was published.<sup>6</sup> Rheumatic heart disease is a major problem in emerging countries, while, in more developed economies, this clinical condition is quite rare and typically found in recent immigrants. In emerging countries, rheumatic valve disease is the most common cardiac disease in pregnant women and the most important cause of maternal death. The situation has improved in the last decades and the ROPAC registry can provide an updated figure of maternal and fetal morbidity and mortality.

Of the 2966 pregnant women included in the ROPAC registry, 390 (13%) women had rheumatic mitral valve disease. Mean age was 29 years, and 26.4% of women were primigravida. The majority lived in countries with an emerging economy (75.4%) and they were known to have a mitral valve disease before pregnancy (75.1%). Caesarean section was performed in the majority of these women (52%). In a large proportion of them, Caesarean section was planned for an obstetric reason; in 20% of cases, a Caesarean section was planned for cardiac reason. Although mortality was only 1.9% during pregnancy, approximately 50% of the women with severe rheumatic mitral stenosis and 23% of those with moderate mitral stenosis developed heart failure during pregnancy. Miscarriage before the 24th week occurred in 3.6% of the cases, fetal mortality after the 24th week of gestation occurred in just 1% of the cases. Low birth weight was observed in more than 16% of cases.

The authors concluded that a close follow-up during pregnancy could allow for an early recognition of symptoms and a timely intervention to avoid an unfavorable maternal or fetal outcome. ■

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