

**RELATIONSHIP BETWEEN ELEVATED LEVEL  
OF hs-CRP MARKER AND ATRIAL  
FIBRILLATION DUE TO DIFFERENT  
ETIOLOGIES**

Thesis

Submitted by

**Mahmoud Mohamed Mahmoud Abdullah**

M.B.B.Ch

**For partial fulfillment of Master Degree in**

**Cardiology**

**Faculty of medicine-Fayoum University**

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## Abstract

Atrial fibrillation (AF) is the most commonly encountered arrhythmia in daily practice that has been associated with an increased mortality and morbidity from thromboembolic complications.<sup>1</sup>

And although AF is the most common arrhythmia, its etiology remains unknown.<sup>2</sup> Left atrial biopsy specimens in individuals with lone AF demonstrate evidence of inflammation,<sup>3</sup> and higher C-Reactive Protein (CRP) levels have been associated with AF,<sup>4</sup> but the role of inflammation in the genesis, maintenance, or propagation of AF is poorly understood.<sup>5</sup>

In patients with AF, atrial enlargement and structural and electrical remodeling form the basis of atrial changes. Structural remodeling is associated with an activated and gradually progressive fibrosis and inflammation process in the atrial extracellular matrix.<sup>6,7</sup>

It has been shown that left atrial spontaneous echo contrast (SEC) is a significant predictor of thrombus formation and thromboembolic events.<sup>8,9</sup> Transesophageal echocardiography (TEE) is a useful diagnostic method for both detection of thrombus and visualization of SEC in the left atrium and left atrial appendage.<sup>10</sup>

Several studies have reported that thromboses are closely related with inflammation, where increased inflammatory markers such as CRP, are associated with adverse vascular events.<sup>11,12,13,14</sup> Due to the impaired inflammatory state, endothelial dysfunction, the prothrombotic state in AF may be driven to SEC or thrombus which can be a cause of thromboembolic events.<sup>2</sup>

### Aim of the study

This is a prospective study that aims to test the hypothesis that AF results in elevated serum levels of inflammatory markers such as hs-CRP and also evaluating the associations of these markers to presence of SEC or thrombus in different AF etiologies.

## **Patients and Methods**

The study population included 40 patients with AF treated at Fayoum University Hospital. For controls, 20 patients with sinus rhythm and no history of AF, as confirmed in a routine physical examination during the same period, were recruited. AF patients were assigned to groups as follows: by etiology, 20 had valvular AF and 20 had non valvular AF

## **Methods**

All patients underwent transthoracic echocardiography using an echocardiograph (Siemens ACUSON CV50). After conventional transthoracic echocardiography, TEE was performed after at least 4 hours of fasting, using 1.5% lidocaine spray for posterior pharyngeal anesthesia.

Blood samples were drawn from each patient and analysed for CBC, ESR, and hs-CRP. Serum levels of hs-CRP were measured with a rate nephelometry method. The reference value to assess the risk of vascular disease was  $< 1.0$  mg/L. The detection limit of the method was  $0.16$  mg/L with levels  $> 1.0$  mg/L are considered marked elevation .

## **Conclusion**

In the light of our study we conclude that inflammatory process is significantly associated with atrial fibrillation and that hs-CRP as an inflammatory marker may act as a prognostic factor for AF.

Our study also concludes that hs-CRP and left atrial diameter (LAD) are independent risk factors for patients with atrial fibrillation. And that inflammation may involve with the formation of thrombosis in those patients.