

THE ROLE OF MULTI-DETECTOR COMPUTED TOMOGRAPHY IN ASSESSMENT OF PULMONARY VENOUS ABNORMALITIES ON PRE-ABLATION MAPPING FOR ATRIAL FIBRILLATION

Presented by: Mohamed Abd Elrazek Mohammed Khamis, resident in radiodiagnosis
Faculty of Medicine, university of Alexandria.

Alaa Mohamed Fathy Asaad, Professor of Radiodiagnosis, Faculty of Medicine, University of Alexandria.

Hussein Galal Aref, lecturer in Radiodiagnosis, Faculty of Medicine, University of Alexandria.

Mohamed Ibrahim Sanhoury, lecturer in cardiology and Angiology, Faculty of Medicine, University of Alexandria.

Mohamed Gibreel, Radiology specialist , Ministry of health.

INTRODUCTION

- Atrial fibrillation is the most common cardiac arrhythmia and the most common sustained supraventricular arrhythmia, as well as a major cause of stroke and the most common cardiac arrhythmia necessitating hospitalization.
- The pulmonary veins are the primary source of atrial fibrillation triggering as there is ectopic foci found in muscular sleeves that extend from the left atrium to the proximal pulmonary veins.
- Since then, catheter ablation emerged and has proven to be an effective and safe treatment for atrial fibrillation, and it is now considered first-line therapy in some situations.
- For optimal treatment, all pulmonary veins must be ablated, so it is critical to understand the anatomy of the pulmonary veins, as well as their ostial orientation.
- The most typical pattern is four separate veins that emerge from the left atrium and have distinct ostia, however increasing research has revealed that variant morphology of pulmonary veins is prevalent, affecting 30-44 % of the population.
- Multidetector CT can evaluates the morphology and size of the pulmonary veins and Left atrium. It is also has wide anatomic field of view, which allows it to assess related lung and cardio-vascular abnormalities

AIM OF THE WORK

The aim of this study is to evaluate the role of multi-detector computed tomography in assessment of pulmonary venous abnormalities on pre-radiofrequency ablation mapping for atrial fibrillation.

PATIENTS

This study included 61 patients 30 males and 31 females complained of atrial fibrillation, and referred to the Alexandria University hospital radio-diagnosis department.

METHODS

The studied patients were subjected to the following:

- Full history taking.
- Thorough clinical and laboratory examination.
- ECG
- Multidetector CT.

RESULTS

- This study founds the typical pattern of two right and two left pulmonary veins with separate ostium in 70% of cases.
- Left common pulmonary vein was found in 15% of cases.
- Right middle lobe pulmonary vein with separate ostium in 13% of cases.
- Right top pulmonary vein in 2% of cases.
- No cases with abnormal venous return.
- Also this study found that the right pulmonary veins ostia are larger than the corresponding left veins and the superior pulmonary veins ostia are larger than the corresponding inferior veins.
- The left common pulmonary vein ostium is larger than any of the single left veins.
- The right middle pulmonary vein with separate ostium is smaller than any of the single right veins.



Figure (1); Typical pattern of two right and two left pulmonary veins with separate ostium. (Angio 3D preset).



Figure (2); Left common pulmonary vein, (Angio 3D preset).



Figure (3); Right middle lobe pulmonary vein with separate ostium (Bones B/W 3D preset).



Figure (4); Right top pulmonary vein (Angio 3D preset).

CONCLUSION

- The pulmonary venous drainage system and pulmonary vein ostia is more variable than previously thought.
- The commonest anomalies are left common trunk and supernumerary veins on the right.
- Multidetector CT can be considered as the modality of choice in the assessment of pulmonary veins in pre-ablation mapping for atrial fibrillation.