Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/z9re0h69

ANTERO-POSTERIOR PADS IN ATRIAL FIBRILLATION

Dr Ajay Gs[1*], Dr Judith Mattakkal Jose[2], Dr Pooja Jayachandran[3]

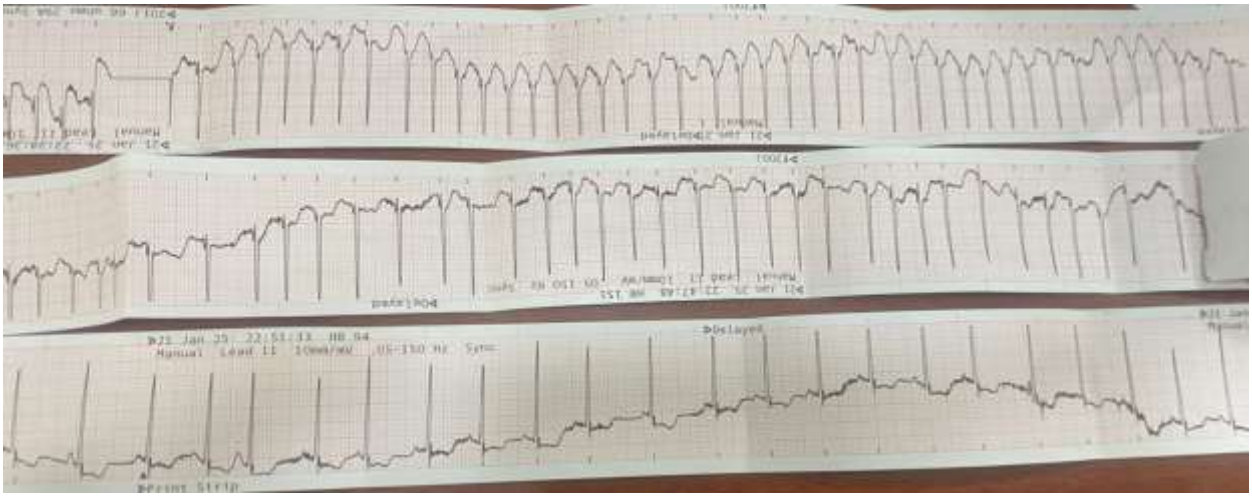
[1*]Consultant, Azeezia Hospital Palakkad
[2]Attending Consultant Artemis Artemis Hopital Gurgaon
[3]Senior Resident Pk Das Hospital, Palakkad

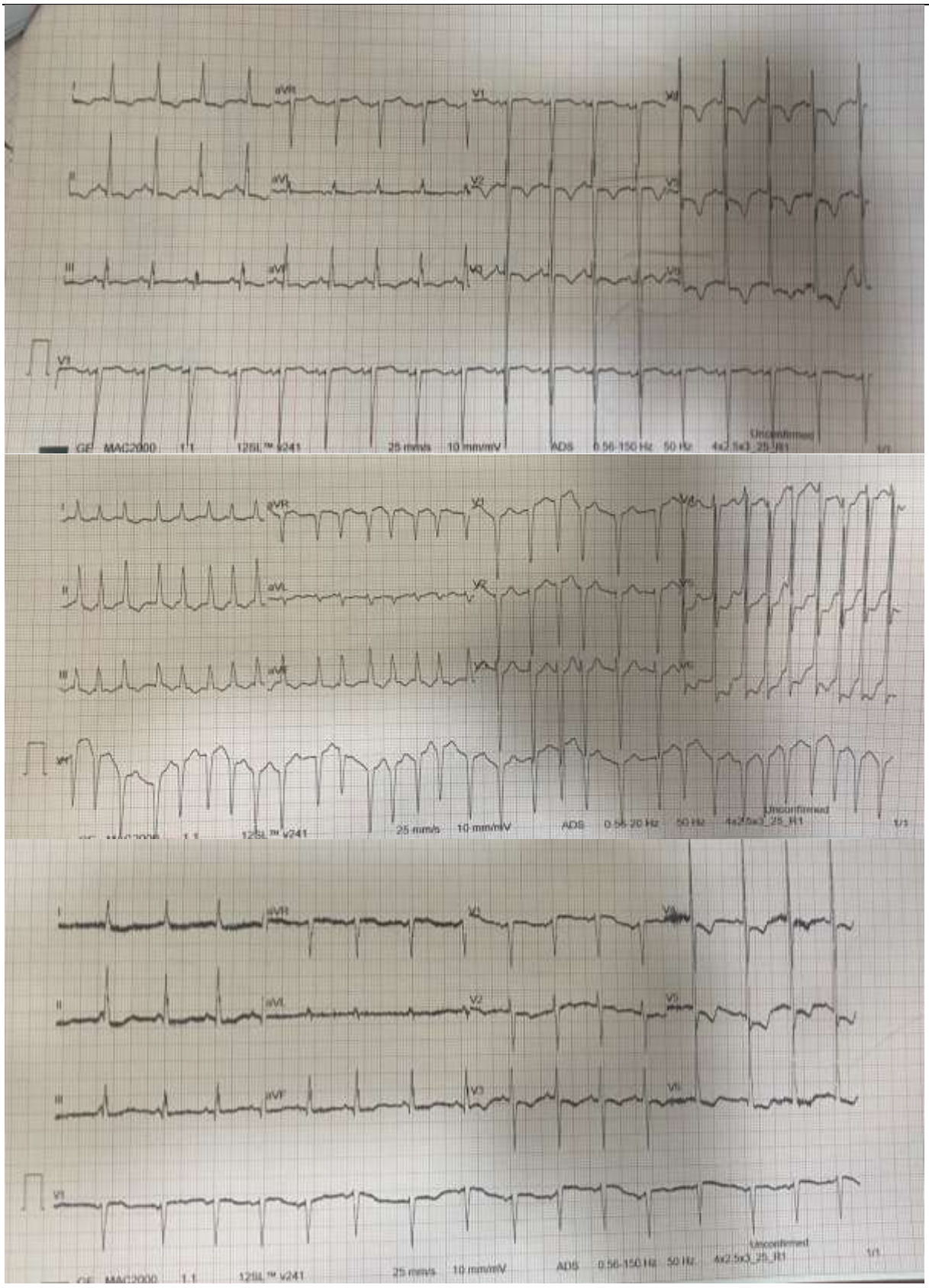
INTRODUCTION

It is commonly known that early defibrillation is crucial for the treatment of atrial fibrillation. Higher survival rates and a greater restoration of spontaneous circulation (ROSC) have been associated with prompt defibrillation and successful initial shock. Defibrillation pads should be placed in the traditional sternal–apical or anterolateral position during defibrillation, according to the American Heart Association (AHA) and European Resuscitation Council guidelines on cardiac arrest management. Other possible acceptable positions include anteroposterior, biaxillary (each side of the chest wall), left precordium–left scapula, and apical electrode–right scapula [1, 2].

CASE REPORT

83 year old female presented to ER with sudden onset of palpitation for past 3hours. She was known case of diabetes Mellitus. Patient was clinically assessed in ER. Vitals were taken and monitored. IV cannula was secured. ECG showed multiple T wave inversions with irregular rhythm. Troponin card test was done which was found to be positive. ABG showed PH of 7.37/ HB 13.6/sodium 135/potassium 3.18/ lactate 5.4/PO2 196/ PCO2 38. Patient monitor showed narrow complex tachycardia with hypotension. 200J DC shock was given two times. Rhythm continued the same and injection cordarone was started. Even after that rhythm remained the same and 200J DC shock was given antero-posteriorly. Rhythm converted to sinus rhythm and infusion cordarone was started. Repeat ABG was normal.




I
aVR
V1
II
aVL
V2
III
aVF
V3
V5
V1
25 mm/s
10 mm/mV
ADS
0.56-150 Hz
50 Hz
Unconfirmed
V1

DISCUSSION

When sufficient electrical current depolarizes a critical mass of atrial muscle, DCCV is successful. The location of the electrode may affect transthoracic impedance and, consequently, the quantity of current that is efficiently supplied to the myocardium[2]. Anteroposterior (AP) and anterolateral (AL) are the two traditional orientations that are frequently utilized for electrode implantation.

Pad location on transthoracic impedance (TTI), which is thought to influence defibrillation success rates, did not differ in a human experimental research on the procedure.

The use of electrode pads in the AP position has been shown to reduce myocardial damage, according to one experimental investigation.

The process of defibrillation involves passing enough electricity (amperes) through the heart. Current flow is determined by the transthoracic impedance (Ohms) or resistance to current flow and the energy selected (Joules).During transthoracic defibrillation, only a very tiny percentage of the electrical energy given passes through the myocardium, so it's critical to maximize this percentage [3]. The most frequent flaws include improper positioning or size, insufficient contact with the chest wall, and the failure or improper use of couplets to facilitate current flow at the interface between the paddles and the chest wall [4].

Early access to defibrillation during cardiac arrest is shown to increase survival rates, especially when there are positive neurological outcomes. The relative effectiveness of the antero-posterior and antero-lateral paddle positions is not well understood. The antero-posterior posture has a reduced trans-thoracic impedance, which could potentially increase the chance of defibrillation[5].

CONCLUSION

The scant information currently available on the fundamentals of external defibrillation, such as the effect of various pad locations on patient-critical outcomes, is highlighted. Despite the recent numerous new technologies, we think that one of the most important goals to improve the prognosis of patients after cardiac arrest is to carry out research aimed at optimizing interventions that have been shown to be beneficial, like the placement of pads during defibrillation.

REFERENCES

1. Kirkland S, Stiell I, AlShawabkeh T, Campbell S, Dickinson G, Rowe BH. The efficacy of pad placement for electrical cardioversion of atrial fibrillation/flutter: a systematic review. Academic Emergency Medicine. 2014 Jul;21(7):717-26.
2. Kirchhof P, Eckardt L, Loh P, Weber K, Fischer RJ, Seidl KH, Böcker D, Breithardt G, Haverkamp W, Borggrefe M. Anterior-posterior versus anterior-lateral electrode positions for external cardioversion of atrial fibrillation: a randomised trial. The Lancet. 2002 Oct 26;360(9342):1275-9.

3. Botto GL, Politi A, Bonini W, Broffoni T, Bonatti R. External cardioversion of atrial fibrillation: role of paddle position on technical efficacy and energy requirements. Heart. 1999 Dec 1;82(6):726-30.
4. Eid M, Jazar DA, Medhekar A, Khalife W, Javaid A, Ahsan C, Shabarek N, Saad M, Rao M, Ong K, Jneid H. Anterior-posterior versus anterior-lateral electrodes position for electrical cardioversion of atrial fibrillation: a meta-analysis of randomized controlled trials. IJC Heart & Vasculature. 2022 Dec 1;43:101129.
5. Mathew TP, Moore A, McIntyre M, Harbinson MT, Campbell NP, Adgey AA, Dalzell GW. Randomised comparison of electrode positions for cardioversion of atrial fibrillation. Heart. 1999 Jun 1;81(6):576-9.