

# Efficacy of Anterior Lateral Electrode compared with Anterior Posterior Electrode in External Cardioversion of Atrial Fibrillation. A Meta-analysis of clinical trials

Karam R.Motawea<sup>1,12</sup>, Mostafa Reda Mostafa<sup>2</sup>, Mohamed Magdi<sup>2</sup>, Sarya Swed<sup>3</sup>, Hager Fathy<sup>4</sup>, Merna Aboelenein<sup>1</sup>, Mohamed Mohamed Belal<sup>1</sup>, Dina M. Awad<sup>1</sup>, Nesreen Elsayed Talat<sup>1</sup>, Samah S.Rozan<sup>1</sup>, Sana Afreen Ansari<sup>5,12</sup>, Rameen Shahid<sup>6,12</sup>, Taher Sbitli<sup>7,12</sup>, Ramy Eweis<sup>8,12</sup>, Bdoor Bamousa<sup>7,12</sup>, Muaaz Aslam<sup>9,12</sup>, Yousef Tanas<sup>1,12</sup>, Yomna E. Dean<sup>1,12</sup>, Walaa Hasan<sup>10,12</sup>, Hani Aiash<sup>11,12</sup>

1-Faculty of Medicine, Alexandria University, Alexandria, Egypt

2-Department of Medicine, Rochester Regional health/Unity Hospital, Rochester, NY, USA.

3-Faculty of Medicine, Aleppo University, Aleppo, Syria

4-Faculty of Medicine, Minia University, Egypt

5-Deccan College of Medical Sciences, Hyderabad, India

6-Dow University of Health Sciences, Karachi, Pakistan

7-Alfaisal University, College of Medicine - Riyadh, Saudi Arabia

8-Faculty of Medicine, Beni Suf University, Egypt

9-Sheikh khalifa bin zayed al nahyan medical and dental college, Lahore Pakistan

10-Clinical oncology and nuclear medicine department, suez canal university, Egypt

11-Upstate Medical University, NY, USA, Cardiovascular perfusion Department

12-RRK worldwide research and education center, NY, USA

**Background:** Some clinical trials reported conflicting results about the efficacy of anterior lateral electrode compared with anterior posterior electrode in electrical cardioversion of atrial fibrillation, and some studies reported no difference in the efficacy between the two procedures. Our aim is to perform a meta-analysis to compare the efficacy of anterior lateral electrode versus anterior posterior electrode in external cardioversion of atrial fibrillation.

**Methods:** We searched the following databases: PUBMED, WOS, OVID and SCOPUS. Inclusion criteria were clinical trials that compared anterior lateral electrode with anterior posterior electrode in external cardioversion of atrial fibrillation. We excluded cohort studies, case reports, editorials and animal studies. RevMan software (5.4) was used to perform the meta-analysis. Cardioversion rate outcome was presented as Odds ratios (OR) with 95% confidence interval (CI).

**Conclusion:** Our meta-analysis revealed that anterior lateral electrode is more effective than anterior posterior electrode in external cardioversion of atrial fibrillation. Subgroup analysis showed that patients who received less than 5 shocks, patients with 60 years-old or more and patients with left atrial diameter > 45 mm benefit from anterior lateral electrode more than anterior posterior electrode in external cardioversion of atrial fibrillation.

**Results:** After full text screening, 11 trials were included in the analysis. The total number of patients included in the study is 1845. The pooled analysis showed a statistically significant association between anterior lateral electrode and increased cardioversion rate of atrial fibrillation compared with anterior posterior electrode (OR = 1.40, 95% CI = 1.02 to 1.92, p-value = 0.04). We observed no heterogeneity among studies ( $P = 0.14$ ,  $I^2 = 32\%$ ). No publication bias was observed. Subgroup analysis revealed a statistically significant association between anterior lateral electrode and increased cardioversion rate of atrial fibrillation compared with anterior posterior electrode in subgroups of less than 5 shocks, patients with 60years-old or more and patients with left atrial diameter > 45 mm ( OR= 1.72 , 95% CI = 1.17 to 2.54 , p value = 0.006 ), ( OR= 1.73 , 95% CI = 1.18 to 2.54 , p value= 0.005 ), and ( OR= 1.86 , 95% CI = 1.04 to 3.34 , p value = 0.04), respectively.