

Flail aortic valve leaflet due to high-voltage electrical injury

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Introduction: Electric shock is the set of pathophysiological events resulting from the action of an electric current on the human body¹. Electrical injuries involve both direct (caused by contact with electricity arc) and indirect mechanisms (mechanical trauma due to falls). The most common sequels after electrical injury in the heart are arrhythmias and myocardial contusion². Large arteries like aorta are rarely affected because their rapid flow allows them to dissipate the heat produced by the electric current. However, they are susceptible to medial necrosis, with aneurysm formation and rupture at a later point of time. There is one case in the literature which described aortic valve rupture due to high-voltage electrical injury³.

Case report: 47-year-old male patient was admitted to our echo lab for ultrasound examination of the heart. In the last two months he had been complaining about exertional dyspnea. His medical history was quite poor: he had never been admitted to the hospital until two months ago when he had been observed for 24 hours after he had suffered a high-voltage electric injury. The transthoracic echocardiography was performed, and we discovered moderately enlarged left ventricle (LVED volume 180 ml) due to severe aortic regurgitation on bicuspid aortic valve with holo-diastolic retrograde flow. The regurgitation jet that filled the two thirds of left ventricular outflow tract with laceration and flail of bicuspid cusps confirmed on transesophageal ultrasound. The patient underwent surgery. The aortic valve was removed and replaced with a mechanical prosthesis.

Conclusion: Cardiac symptoms and echocardiographic findings that initiated two months after a high-voltage electric injury led us to conclusion that bicuspid valve was probably injured by electrical shock. To the authors' knowledge, this is the first reported case of valvular rupture due to electrical injury in Croatian population.

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LITERATURE

1. Koumbourlis AC. Electrical injuries. *Crit Care Med.* 2002 Nov;30(11 Suppl):S424-30. **PubMed:** <https://www.ncbi.nlm.nih.gov/pubmed/12528784>
2. Waldmann V, Narayanan K, Combes N, Jost D, Jouven X, Marijon E. Electrical cardiac injuries: current concepts and management. *Eur Heart J.* 2018 Apr 21;39(16):1459-1465. *Eur Heart J.* 2018 Apr 21;39(16):1459-1465. <https://doi.org/10.1093/eurheartj/ehx142>
3. Güler N, Ozkara C, Tuncer M, Güntekin U, Kocabas S. Aortic valve rupture due to high-voltage electrical injury: case report. *J Heart Valve Dis.* 2004 Sep;13(5):857-9. **PubMed:** <https://www.ncbi.nlm.nih.gov/pubmed/15473491>