Ultrasound Guided Percutaneous Left Stellate Ganglion Block for ventricular arrhythmia storm in acute coronary syndrome following percutaneous coronary intervention: a case series

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Introduction: Electrical storm may not be responsive to anti-arrhythmic drug (AAD) therapy. Heightened sympathetic tone plays a critical role in the initiation and maintenance of ventricular arrhythmia (VA) storm. There is a paucity of data regarding efficacy of an easily performable bed-side ultrasound guided (USG) left stellate ganglion block (SGB) in acute coronary syndrome.

Methods: Characteristics of 11 patients who underwent bed-side USG-guided left SGB for VA storm were analyzed. Known cases of coronary artery disease and past history of myocardial infarction were excluded. Left SGB was performed under ultrasound guidance using a 7.5 MHz 9L-D broad-spectrum linear transducer probe (GE vivid S70 ultrasound machine). In the supine position with slightly extended neck the Chassaignaic tubercle was located. The site was anaesthetised avoiding the vessels by Doppler images with 5cc of 2% Lignocaine and 5cc 0.5% Bupivacaine lidocaine using a 7 cm long 22 gauge needle, directed towards the longus colli muscle medial to the common carotid artery and jugular vein. The procedure was repeated after 24 hours including right stellate ganglion block if storm persisted.

Result: All patients in VA storm received at least one intravenous and one oral AAD and multiple DC shocks before the procedure. Acute ST elevation myocardial infarction (STEMI) in eight, NSTEMI in two and unstable angina in one patient. The mean age and LVEF were 57±14.8 years and 35±6.2% respectively. All patients underwent percutaneous coronary intervention (PCI) and had VT storm after 48 hours of PCI. The mean number of AAD and DC shocks given were 1.8 ±1.2 and 3±1 respectively. All patients were free of VA storm for a mean of 1.3±1.7 days. Four patients underwent VT ablation as a rescue therapy. Eight patients were implanted with ICD in the follow-up. Two patients died of refractory VA storm despite second attempt of SGB and one patient with heart-failure. Horner syndrome was present in all patients after SGB and recovered later. Local site hematoma occurred in 1 patient. Repeat SGB and right SGB were required in 2 and 1 patient respectively.
**Conclusion:** Bed-side USG guided SGB is an effective and easily performable strategy to overcome VA storm in acute coronary syndrome.