

Cardiac arrest during laparoscopic cholecystectomy in a patient with systemic sclerosis

Sir,

Systemic sclerosis (SSc) affects multiple organs including the heart.^[1] Abnormal electrocardiogram (ECG) is present in the majority,^[2] but may be normal, necessitating detailed assessment.^[3] We report a case of sudden cardiac arrest in a 42-year-old female with SSc, operated for laparoscopic cholecystectomy. She complained of symptoms suggestive of cholelithiasis with cholecystitis and stiffness of the neck joint. The history was not suggestive of recent disease flare-up or cardiac comorbidity. A diagnosis of limited scleroderma with only facial involvement was made. The only abnormality on preoperative investigations was Q waves in inferior ECG leads. Cardiology opinion in view

of no history and signs suggestive of cardiac comorbidity, normal echocardiography, age and gender and diagnosis of limited scleroderma, and in view of non-modifiable risk, was to proceed with surgery with low risk for an adverse cardiac event.

Anaesthesia was induced with thiopentone, midazolam and fentanyl and maintained with isoflurane in oxygen and air with atracurium. Antiemetic prophylaxis was given. Normothermia was maintained. The surgery was uneventful. Tracheal extubation was planned in a deeper plane of anaesthesia to avoid autonomic response. Suddenly, without any forewarning signs, asystole occurred. External cardiac massage i.e., cardiopulmonary resuscitation (CPR) was started. No gross abnormality was found on arterial blood sampled for blood gas analysis. During CPR, pulseless ventricular tachycardia developed. Direct current (DC) Shock, 150 J was given following which, rhythm deteriorated into ventricular fibrillation requiring the second shock of 200 J. Return of

sinus rhythm with spontaneous circulation (ROSC) was achieved at 25 min. Echocardiography following ROSC suggested global hypokinesia with ejection fraction (EF) of 30%. The patient was discharged after one week with an EF of 40%. Two weeks later, EF improved to 50%. Complete recovery was attributed to high-quality comprehensive cardiopulmonary life support.^[4]

Rhythm disturbances in SSc are attributed to vascular lesions and fibrosis impairing microcirculation and myocardial function.^[1] Prevalence and severity of arrhythmias, however, do not correlate with disease severity. ECG may be normal, but less so in the presence of simultaneous echocardiographic abnormalities.^[3] The history in our patient was not suggestive of any cardiovascular comorbidity. Q waves were present on inferior ECG leads, but echocardiography at rest was unremarkable. A detailed workup, which we did not do, can help uncover ECG abnormalities.^[3] Depressed conduction velocity in atria, changes in resting membrane potential, action potential amplitude and/or the maximal velocity of the action potential are present in SSc and cause atrial conduction delay and abnormal myocardial excitability.^[5] In our patient, sinus rhythm without any preceding tachy- or brady-arrhythmia, deteriorated into complete asystole. Asystole occurred probably due to the failure of conduction of electrical impulse in atria with simultaneous failure of ventricular pacemaker. What triggered these changes is hard to speculate as the depth of anaesthesia was purposefully maintained during weaning from mechanical ventilation, and the asystole occurred before attempting tracheal extubation. Subsequently, during resuscitation, abnormal excitability of the myocardium probably caused ventricular arrhythmias requiring electrical cardioversion.

Myocardial and ECG abnormalities in SSc can be diagnosed using magnetic resonance imaging and 24 h Holter monitoring and analysis for heart rate variability (HRV), heart rate turbulence (HRT), QT variability index, and arrhythmogenicity index.^[5,6] We were deceived by the absence of suggestive history, normal echocardiography and short surgical procedure proposed. The case highlights the risk of an adverse cardiac event in unsuspecting SSc patients and the need for detailed investigation and prognostication for an adverse cardiac event, in patients presenting for anaesthesia for surgery, irrespective of the extent of surgical intervention, patient's functional and disease status.

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Conflicts of interest

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