

CPR AND DEFIBRILLATION IN A PATIENT WITH PECTUS EXCAVATUM DURING M.I.R.P.E.

Valenti F.¹, Zeponi F.², Fabbri G.², Bonetti C.¹, Mariani R.¹, Di Martino E.¹, Blasetti AG², Marinangeli F.¹

¹ Chair of Anesthesiology and Intensive Care - University of L'Aquila

² Department of Anesthesia and Intensive Care, SS Filippo and Nicola's Hospital- Avezzano

AIM:

Traditional correction of pectus excavatum is a long procedure, involving resection of bone and cartilage. More recently, a technique of minimally invasive repair (M.I.R.P.E.), has been developed by Donald Nuss (1). The likelihood of these patients requiring CPR, although small, may be greater than in the general population as a consequence of a primary dysrhythmia or complication of surgery (2).

MATERIALS AND METHODS:

Patient male, aged 15 years, height 180 cm, weighing 70 kg, ASA II. Medical history: only a major depressive episode one year ago, no surgery, no drug allergy; a few months ago reports exertional dyspnea and exercise intolerance. Cardiopulmonary examination: vesicular murmur not transmitted very widely over the lung; action cardiac rhythm, apparently breaks free, b.p.110/70mmHg, HR 72bpm, SpO₂: 99%. Preoperative investigations: Spirometry: mild restrictive defect (mild CPT↓, FVC↓, FEV₁↓). ECG: SR, HR 78bpm, abnormal VR, left axis deviation. Echocardiogram: mild depression sternal compressing the heart to the right side. Chest Tc: (Haller Index>3.5). The patient was premedicated orally 30 minutes prior to surgery with midazolam (0.2mg/kg) + atropine 0,5mg i.m). In the operating room monitoring of vital parameters: ECG, invasive blood pressure by right radial artery, SpO₂, heart rate. General anesthesia was induced with propofol (3mg/kg), muscle relaxation by cisatracurium (2mg/kg), intubation with endotracheal tube Univent for selective intubation; maintenance of general anesthesia with isoflurane (1MAC). Then, performed thoracic epidural block at T8-9 level (Isobaric Levobupivacaine 0,5% 50mg) and then continuous infusion syringe pump at 4ml/h (20ml of Isobaric Levobupivacaine 0.5%+20ml saline NCl 0.9%+20mcg Sufentanil). The patient maintained during the operation stability of vital signs, but during the final fixing of the bar to the chest muscles with stabilizers, comes ventricular tachycardia and cardiac arrest.

CONCLUSIONS:

Correct placement of defibrillation pads is important to optimize the chances of successful defibrillation and minimize defibrillation energy requirements: the pads are generally placed in the anterior-lateral or anterior-posterior position, but the presence of the bar deflects the discharge which does not reach the heart and determines burns, then were placed in the anterior-posterior mode. Also the difficulty to perform external cardiac massage depends on the implanted bar, designed to apply pressure outward on the sternum allowing it to maintain its convexity. So chest compressions were performed in lateral mode using the automatic external massager and monitoring ETCO₂, IBP, SpO₂, HR (if not sufficient, the heart surgeon would provide MCI)(3). Thanks to the timely execution of the MCE and defibrillation, the patient has resumed normal sinus

cardiac activity and recovery of vital signs and has been sent to the ICU for an appropriate post-resuscitation care. Although the Nuss procedure is reported to be minimally invasive, some serious complications concerning both surgery and anesthesia should not be overlooked (4).

References

1. Nuss D, Kelly RE, Jr., Croitoru DP, et al. A 10-year review of a minimally invasive technique for the correction of pectus excavatum.
2. Advanced Cardiovascular Life Support, Part 6, Section 2, Defibrillation, Resuscitation 2000;46:109/13.
3. Miranda CC, Newton MC. Successful defibrillation in the prone position. Br J Anaesth 2001;87:937/8.
4. Umuroglu T., Bostancı K, Thomas D.T., Yuksel M., Yilmaz G. Perioperative Anesthetic and Surgical Complications of the Nuss Procedure Journal of Cardiothoracic and Vascular Anesthesia, Vol27, No3(June), 2013; pp436–440