



ORIGINAL RESEARCH PAPER

Anesthesiology

SUCCESSFUL MANAGEMENT OF ON TABLE PEA WITH UNINTERRUPTED CHEST COMPRESSIONS – A CASE REPORT

KEY WORDS: PEA(Pulseless Electrical Activity) , spine surgery , chest compressions, Dexmedetomidine.

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ABSTRACT Pulseless electrical activity is the first documented rhythm in 30 to 38% of adults with in-hospital cardiac arrest. It is a significant cause of mortality especially in hospitalized elderly patients. Prone position during surgery is associated with reduced stroke volume, cardiac index, raised central venous pressure and low blood pressure. Here we report a elderly male patient who was posted for spine surgery in prone position who intraoperatively showed pulseless electrical activity as was successfully managed and discharged.

INTRODUCTION

Pulseless electrical activity is a clinical condition characterized by unresponsiveness and lack of a palpable pulse in presence of organized cardiac electrical activity. It is a significant cause of mortality especially in hospitalized elderly patients . Pulseless electrical activity is the first documented rhythm in 30 to 38% of adults with in-hospital cardiac arrest. (1) The mnemonic "4H&4T" was proposed as a reminder to assess for Hypoxia, Hypovolaemia, Hypo/Hyperkalaemia, Hypothermia, Thrombosis, cardiac Tamponade, Toxins, and Tension pneumothorax(2) Good quality cardiopulmonary resuscitation is the first step in management. There are many studies with post CPR survival rates varying from 5.3% to 32.2%. (3)

Here we present a case report of a 70year male patient who landed up in PEA at the end of spine fusion surgery which was successfully managed by uninterrupted chest compressions and early defibrillation.

Case Presentation:

- A 70 year male presented with low back radiating to right lower limb pain since last two months, with complains of weakness in both lower limbs since last 4-5 days.
- Known case of tobacco chewer since 40 years with asthma and on regular treatment (aerocart rotacap).
- Posted for L3-L4-L5 pedicle screw fixation.
- Preop orders were given regarding NBM period and consent. 2 pints of PCV were kept ready.
- General physical examination and investigations were WNL.
- Preoperatively nebulization with duolin TDS and budesonide BD was given for 3 days.

Plan Of Anesthesia:

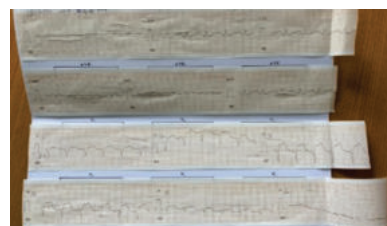
General anesthesia , Hypotensive anesthesia.

Intraoperative:

- On the day of surgery baseline parameters were noted. IV line was secured with 20G cannula and ringer lactate started.
- Premedication was given - Inj Glycopyrrolate 0.2 mg IV ,inj midazolam 2 mg and inj. fentanyl citrate 100mcg. Inj Tranexamic acid 500 mg IV and 500 mg in 100 ml NS was given. Inj Dexamethasone 4 mg was given
- Patient was preoxygenated with 100% Fio2 for 5 min .Inj xylocard 1.5 mg /kg was given IV .Induction was done with 100 mg propofol IV .IPPV with bag and mask was given and patient was intubated with ET tube no 8 under inj succinylcholine 100 mg IV. Bilateral equal air entry was

confirmed.

- Cuff was inflated with 7 ml of air and tube was fixed. 100% oxygen was continued. Vitals were noted. Inj vecuronium bromide 4mg was given. patient was made prone. Anesthesia was maintained with oxygen and nitrous oxide 2L/min each and isoflurane with mac 1-2%.
- To maintain dept of analgesia inj Paracetamol 100ml along with inj Tramadol 100 mg IV was given one hour after surgical incision.
- Inj. Dexmedetomidine 50mcg in 100ml normal saline was given over 20 minutes.
- MAP was maintained 60-70mmHg throughout.
- Bloodless surgical field was achieved and surgery lasted for 90minutes.
- Fluid input was 1500ml and output – 800ml by the end of surgery.
- During closure pulse rate was 50-54 bpm so inj. glycopyrrolate 0.2 mg was given.
- After dressing 100% oxygen was given. Patient was made supine. Immediately PEA was noted, inj Atropine 0.6 mg was given. and CPR was started.
- Pulse and BP were non recordable. Inj Adrenaline 1 amp was given stat and CPR continued.
- Seriousness was informed to the relatives.
- Immediately after adrenaline, rhythm got changed to ventricular fibrillation, so decision of defibrillation was taken and shock of 200J was delivered.
- Second shock of 260 J was given . CPR continued. Inj. Sodium bicarbonate one amp was given . third shock of 360J was given and CPR continued.
- Meanwhile adrenaline infusion @10 ml/hr and dobutamine infusion @8ml/hr started. CPR continued.
- ECG rhythm started reappearing . feeble low volume pulse palpable.
- 500 ml RL was given. After 50 min of efforts pulse was regained with rate of 100-112bpm and bp of 176/100 mmHg .Mild bilateral basal crepts noted. Inj furosemide 10 mg IV was given.
- serial ECG were taken during resuscitation which showed anterior wall MI.



1. ECG after resuscitation

- BSL on glucometer was 166mg/dl. Urine output was 800 ml.
- Meanwhile further arrangements for shifting him to higher (cardiac) center were made Adrenaline infusion was stopped after stabilization of vitals.
 - Noradrenaline infusion was started @6-8 ml/hr. ET tube was in situ with FIO2 100% throughout. After about one hour patient was shifted to cardiac unit.
 - Follow up was done. Immediate ABG showed metabolic acidosis which was corrected.
 - 2DEcho - Normal cardiac chambers RWMA positive. Mid and distal IVS , Apex and Anterior wall akinetic .severe LV dysfunction(LVEF – 30%). Grade 2 diastolic dysfunction . Mild MR, No AR ,No TR, No PR.
 - Next day CAG was done followed by emergency PTCA to LAD was done.
 - Patient shifted to cardiac ICU and ward care patient was successfully discharged on 10th postoperative day.



2. Post operative lumbar spine X-ray



3. Patient at follow up.

DISCUSSION:

Spine surgeries are performed in prone position providing better access to posterior structures. It also carries some risks, most of which are hypovolemia and cardiac arrest. (4)

Prone position during surgery is associated with reduced stroke volume, cardiac index, raised central venous pressure and low blood pressure. This, when combined with other factors like hypotensive anesthesia is associated with an increased risk for cardiovascular collapse and arrest. Dexmedetomidine is a newer alpha 2 agonist which has analgesic and sedative properties but also seen to cause bradycardia and hypotension. In our case prone position and the use of dexmedetomidine gave good hypotensive anesthesia and excellent surgical field.

Perioperative Myocardial Injury is a major cause of short-term and long-term morbidity and mortality. It accounts for about 12–40% in-hospital mortality (5).

PEA is found initially in about 55% of people in cardiac arrest and occurs when a major cardiovascular, respiratory, or metabolic derangement results in the inability of cardiac muscle to generate sufficient force in response to electrical depolarization. PEA is always caused by a profound cardiovascular insult. (6)

Geriatric age, hypotensive anesthesia with dexmedetomidine and prone position in our patient might have contributed to perioperative MI. But it was timely recognised and intervention was done.

CONCLUSION:

We can conclude that pulseless electrical activity is a common occurrence in elderly patients and prompt identification and vigilant management of the same with uninterrupted chest compressions, hemodynamic support and early defibrillation helps avoid unexpected mortality.

Conflict of interest- Nil

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