

# Severe reaction to inadvertent intravenous administration of norepinephrine

C. Monteiro<sup>1</sup>, S. Ribeiro<sup>1</sup>, A. Gouveia<sup>1</sup>, A. Lares<sup>1</sup>

<sup>1</sup>Centro Hospitalar Universitário do Algarve - Unidade de Faro - Faro (Portugal)

## Background:

Norepinephrine (NE) is an  $\alpha_1$  and  $\beta_1$  agonist, used for its arterial, venous vasoconstrictor, and positive inotropic properties.[1] However, accidental intravenous (IV) NE is known to result in serious cardiovascular side effects which may include hypertension (HT), angina, arrhythmia, acute myocardial infarction (AMI) and ventricular fibrillation with cardiac arrest.[2,3]

## Case Report:

### Identification:

- 52 years old male patient;
- Proposed for elective excision of an hemangiopericytoma;

### Pre-anaesthetic evaluation:

- *Previous medical history:* laparoscopic appendectomy;
- *Pre-operative airway evaluation:* no prediction of a difficult airway;
- *ASA physical status:* class II;
- *Anthropometric parameters:* Weight: 80 Kg; Height: 1,75 cm; BMI: 26,1 Kg/m<sup>2</sup>;

### Anaesthetic approach:

- *Induction:* fentanyl 0,15 mg, propofol 160 mg and rocuronium 50 mg;
- *Maintenance:* sevoflurane (MAC 1.5) + O<sub>2</sub> + air; perfusions of rocuronium (2 mg/mL) 16 mL/h, remifentanyl (50 mcg/mL) 0,05-2 mcg/Kg/min and norepinephrine (200 mcg/mL) 0,025-0,1 mcg/Kg/min;

### Critical event:

- Upon final stages of the surgery, as perfusions were stopped, an accidental administration of 1 mg of NE occurred;
- Shortly thereafter, the patient developed supraventricular tachycardia up to 190 bpm and arterial HT (205/110 mmHg);

### Critical event:

- ECG showed signs of myocardial ischemia with ST-segment elevation in the D2 and V5 leads. Afterwards, arterial pressure dropped abruptly to 80/40 mmHg;
- After hemodynamic stabilisation, the surgery was finished and the patient was then admitted in the ICU;

### Recovery:

- ECG showed no signs compatible with ischemia nor AMI;
- Cardiac biomarkers were within normal range;
- No signs of congestion were identified in chest X-ray;
- Patient was then extubated uneventfully;
- Discharge in stable condition occurred past 6 days.

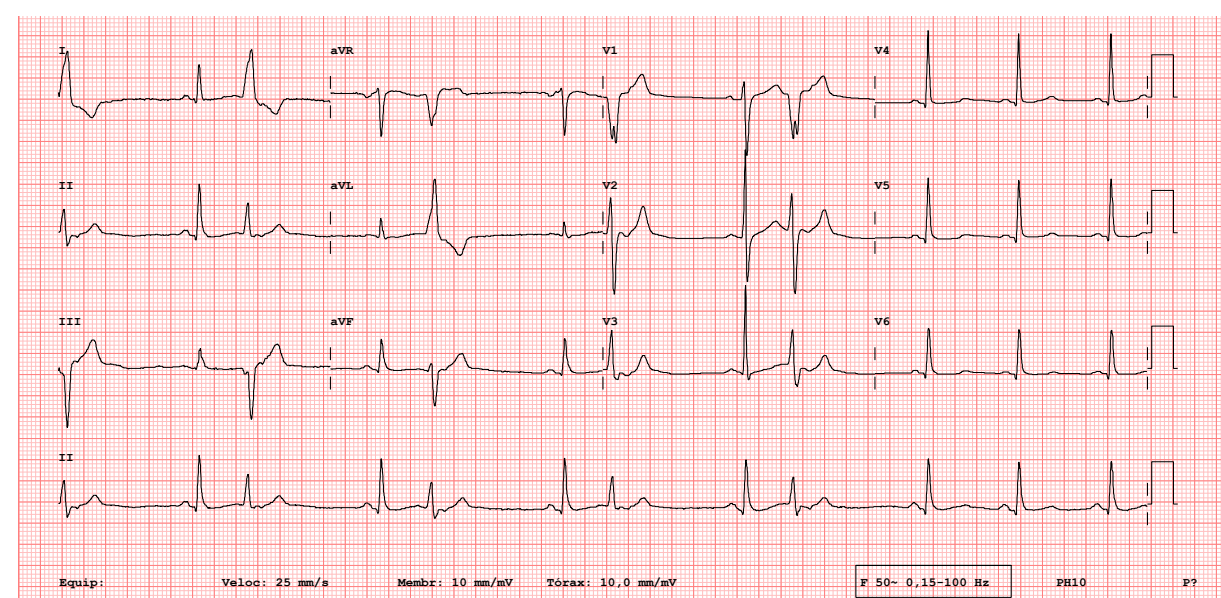
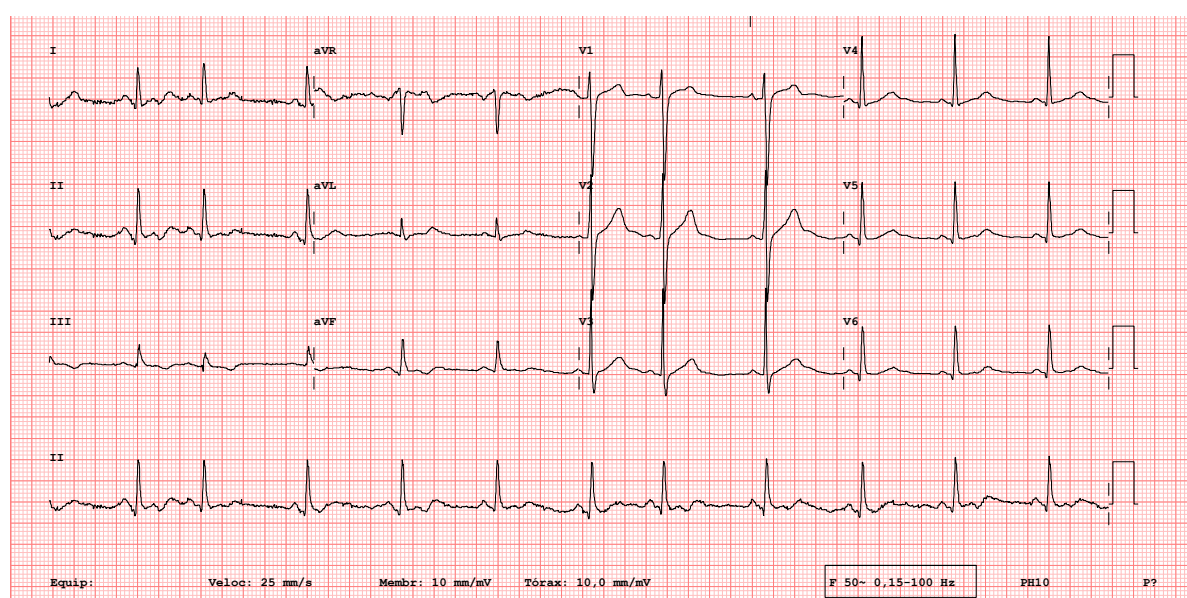


Figure 1 and 2: Pre and post-operative electrocardiography.

## Discussion:

This clinical pattern was similar to cases of NE overdose previously described.[1] Despite uncommon, it highlights the importance of independent double-checking and strict signing of all medications before administration. Early recognition and support treatment are crucial to avoid fatal outcomes.

## Learning points:

Despite all the anesthesiology evolution in the past decades, it is vital to always assure the patient safety in order to diminish the occurrence of avoidable errors.

## References:

- [1] Ibbey AA, et al. Inadvertent overinfusion of norepinephrine using infusion pump loading dose. *Int Crit Care Nurs* 2015 Dec; 31(6): 375-9.
- [2] Arfi AA, et al. Acute myocardial ischemia following accidental intravenous administration of epinephrine in high concentration. *Ind Heart J* 2005; 57: 261-64.
- [3] Ahmed DB, et al. Intraoperative Ventricular Fibrillation Arrest Caused by Accidental Intravenous Injection of Epinephrine. *Ibn J Med BS* 2014; 6(5): 223-226.