NON-CARDIAC SURGERY IN PATIENTS WITH VENTRICULAR ASSIST DEVICES: OUR EXPERIENCE

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BACKGROUND:

Heart failure affects 1-2% of the global population, and above 75 years old, its prevalence raises up to 10-20% (1), representing around 2% of the total health expenditure. At present, we can realize the higher use of ventricular assist devices (VAD) as a solution for congestive heart failure refractory to medical treatment and as a bridge to cardiac trasplant (3). We present two cases of patients with ventricular assist devices undergoing urgent surgery.

CASE 1:

Male, with a LVAD (Berlin Heart®). Medication: dipiridamol 100mg c/8h, acetylsalicylic acid 300mg c/24h., carvedilol, captopril, sildenafil, enoxaparine 80mg c/12. Emergency laparotomy for an open appendicectomy. Haemodynamically stable during intropertory not requiring vasoactive support. Not important intraoperative bleeding. Transfusion of 1 platelet pool. Enoxaparin suspended before surgery. Fluids: 500mL colloid and 1000mL crystalloid. Transfer to the ICU intubated. Blood test after admission: Lact: 1,1; Plat: 783.000; INR: 2,34; TTPA 47,7; Hb 10,2 g/dL; Htco: 32%. Extubated after 4 hours Antibiotic therapy: Vancomicin and Meropenem. The day after the patient remains hemodynamically stable, the acetylsalicylic acid (100mg/d), dipiridamol (100mg c/8h) and Infussion of 1000Ui of sodic heparin are initiated. Not required transfusion during the postoperative. Discharge from ICU 3 days after surgery.

CASE2:

Male, 50 years old with a BVAD (Berlin Heart ®). Medication: Acenocumarol (removed 3 days before surgery), clopidogrel (changed to acetylsalicylic acid 100mg a week before surgery), bisoprolol, furosemide, omeprazol. Programmed laparoscopic cholecystectomy. Manteined hypotension during the surgery requiring norepinephrin (0,022 mcg/kg/min) and volumen. Preoperative INR: 2, so we proceeded to the administration of 1200Ui of prothrombinic complex (prothromplex). Intraoperative fluids: 2000mL crystalloid. Not important intraoperative bleeding. Admission in ICU after surgery haemodinamically stable and extubated. Blood test at arriving: Lactate 0,7; Plats:262,000; INR 1,4; TTPA:48,60 sec; Hb:7,60g/dL; Htco: 23,7. Blood transfusion in the postoperative. Reinsertion of Sintrom with INR control between 2,5-3,5. 48h after surgical procedure. Discharge from ICU 24hs after surgery. . The day after the surgery, the Infussion of 400Ui/h of sodic heparin was initiated.

CASE 1	CASE 2
Left ventricular (Berlin Heart)	Biventricular (Berlin Heart)
Laparotomy for an open appendicectomy	Laparoscopic Cholecystectomy
Enoxaparin 80mg/d ASA 300mg/d Dipiridamol 100mg/8h	Sintrom (remove 3 d before) Clopidogrel 75 mg/d (change to ASA 100mg/d a week before
1 platelet pool	1 platelet pool 1200ui of prothrombinic complex
500mL colloids 1000mL crystalloids	2000mL crystalloids
HD stable: No vasoactive support	Hypotense: NE 0,022mcg/kg/min
1000Ui de sodic heparin day after ASA 100mg/day Dipiridamol 100mg/8h Hb 10,2	400 ui/h sodic heparin day after Hb 7,6 → 1 red cells solution

DISCUSSION:

Importance of understanding several aspects: the safe and proper operation of each device, underlying the importance of the correct placement of the VAD cannulas during the intervention avoiding their kinking so the cardiac output is adequate; In second place, the accurate managment of the medication, including anticoagulants and antiplatelets, to prevent a profuse intraoperative bleeding (1); In addition we should know the physiological cardiopulmonary changes due to the implation of VAD knowing large volumen infussions during the surgery are necessary due to its dependance of high preload to its correct performance. In closing, we have to be able to determine the correct implementation of antibiotherapy because of their high risk of infections.

LEARNING POINT:

We should create protocols for the corecct anaesthetic management of patients with VAD. We have to understand the performance of these devices so if a complication shows up we know how to deal with it immediatly. The two most relevant points during the intraoperative are, the manteinance of a good preload and the correct colocation of the cannulas and the medication management.

1. Delgado M; Bernabeo, G; Hernán Delgado, D; Avances en asistencias circulatorias mecánicas. Division of cardiology and trasplantation. University Health Network. Toronto. Ontario. Canada.
2. Feldman, D; Pamboukinan, SV; Teuteberg JJ, et al. The 2013 International society for heart and lung transplantation guidelines for mechanical circulatory support: executive summary. J Heart Lung Transplant 2013; 32: 157.