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HEPARIN IN THE LIMB REPERFUSION LINE IN ADULTS UNDERGOING ECLS

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ABSTRACT:

Thromboembolic events in the reperfusion line and in the inferior limb are well known on patients undergoing veno-arterial ECLS. In our group, we also could observe these incidents. We described a method which consist in connect the heparin perfusion directly in the reperfusion limb line using the three way stopcock of the introducer used for the limb reperfusion. We routinely administer, the habitual heparin dose needed for the ECLS maintenance in the reperfusion limb line instead through a conventional venous access. Since we use this method we had not observe clots in the reperfusion limb line, neither ischemic signs on patients limbs. We had not needed extra heparin doses to reach anticoagulation levels. No other complications had been observed.

OVERVIEW

ExtraCorporeal Life Support (ECLS) circuits are commonly modified in cases of veno-arterial support in order to perfuse the limb where the arterial cannulae is located. The widespread practice consist in connect a line from the luer-lock of the arterial cannulae to a 7 french (Fr) introducer canalized for the distal limb perfusion (1). Thromboembolic events in the reperfusion line and in the inferior limb are well known on patients undergoing veno-arterial ECLS (2, 3).

DESCRIPTION

In our center we use the Cardiohelp® (Maquet Cardiopulmonary. Getinge Group) with its circuit and its HLS cannulas®. To perfuse the limb, we place in the superficial femoral artery, a 7 Fr Terumo® introducer which does not contains heparin coating. We connect a ¼ inch line into the luer of the arterial cannulae to the three way stopcock of the introducer. The method we described consist in connect, to the same three way stopcock, the heparin perfusion needed in these kind of therapies at the same doses. (Figure 1)

DISCUSSION

Thromboembolic events in the reperfusion line and in the inferior limb are probably caused because of the turbulent flow throughout the right angle of the introducer and the three way stopcock. The lack of the heparin coating on the introducer against the rest of the circuit is also determinant in clot formation in this part of the circuit.. In fact, in our experience, this is the place of the ECLS circuit, where clots are formed firstly. Administration of heparin standard dose in the reperfusion limb line provides the higher concentration of heparin in the most predisposed part of the circuit to be coagulated. This simple method avoids clot formation in the circuit and embolisms to the patient limb while Activated Clotting Time (ACT) therapeutic values between 150 and 180 seconds are maintained in the systemic circulation according with the usual clinical practice and with the instructions for use of the Cardiohelp®. Since we use routinely this method we have not returned to observe thromboembolic complications in contrast to the conventional heparin administration throughout a venous central catheter.

FIGURES

Figure 1 *A: Arterial line ECLS. B: three way stopcock with heparin perfusion and reperfusion limb line connected. C: Reperfusion limb line. D: Arterial cannulae placed in femoral artery. E: Introducer placed in superficial femoral artery to perfuse the inferior right leg.*

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