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IMAGING IN INTENSIVE CARE MEDICINE

Emergency craniotomy in semi-lateral position for posterior fossa hemorrhage evacuation under venoarterial extracorporeal membrane oxygenation

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A 38-year-old male patient (BMI = 34 kg/m^2) was admitted to the ICU for refractory post-operative cardiogenic shock requiring femoro-femoral venoarterial extracorporeal membrane oxygenation (FF-VA-ECMO) support after an emergency mechanical Bentall procedure. Nine days after surgery, sudden neurological deterioration revealed a cerebellar intracranial hemorrhage associated with acute hydrocephalus and brainstem compression (Fig. 1a, b). Anticoagulation was immediately stopped and an emergency craniotomy was performed. The first challenge was patient positioning during neurosurgery. Due to the patient's obesity and FF-VA-ECMO cannulation, the risk of dislodgment or malfunction of cannula was deemed too high in sitting or prone positions that are considered as gold standards for posterior fossa procedures. Therefore, neurosurgery was performed in the left semi-lateral position (Fig. 1c, d). Despite limited access to the posterior fossa, this position allowed evacuation of the hematoma. The second challenge was anticoagulation management. VA-ECMO was successfully weaned 5 days after neurosurgery, without thrombotic events. Low-dose unfractionated heparin (5 units/kg/h) was reinitiated following multidisciplinary discussion only 10 days after neurosurgery. The patient was discharged home with a score of 1 on the modified Rankin scale at 90 days. This case illustrates that proper positioning during surgery under ECMO is a major challenge in providing for the patient's safety.

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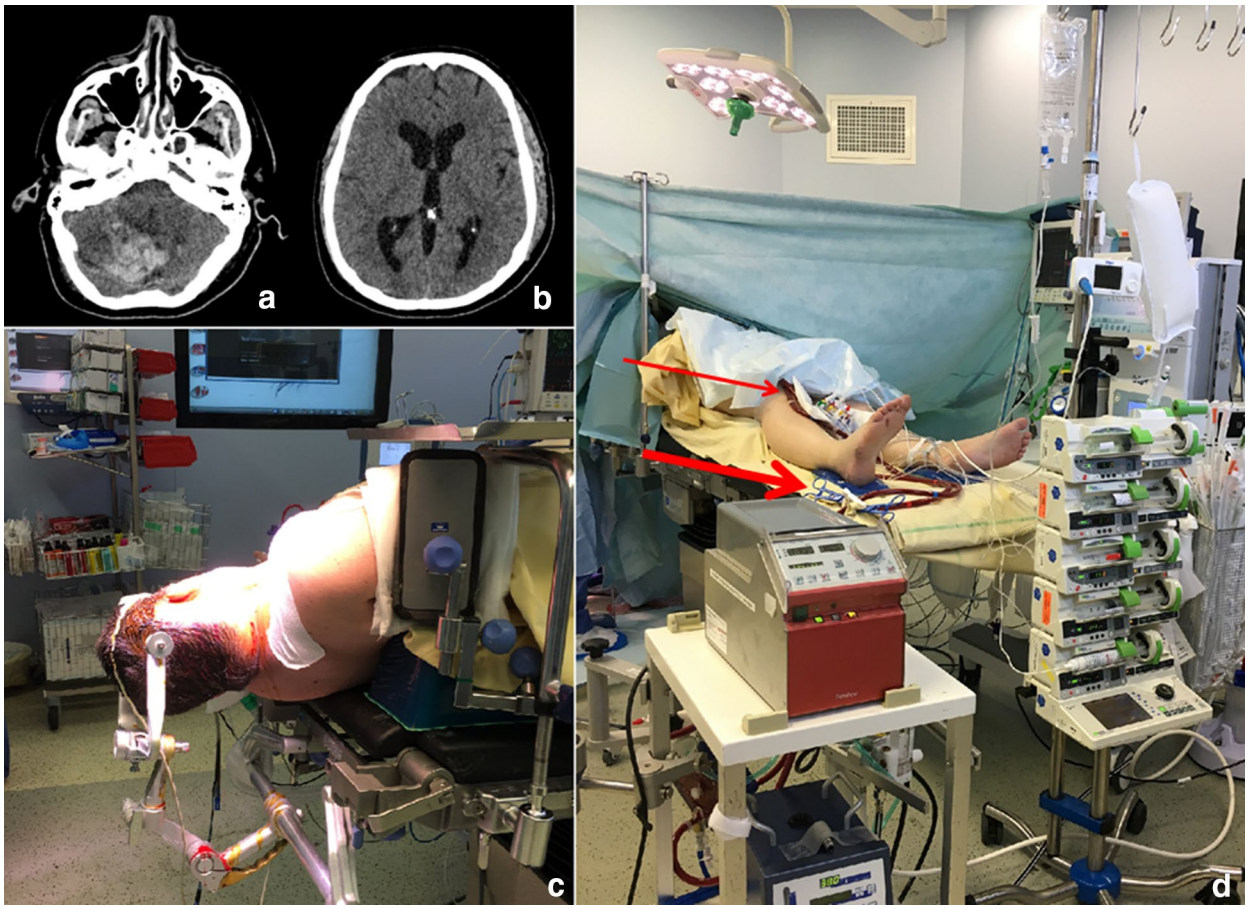

Fig. 1 **a** CT-scan showing cerebellar intracranial hemorrhage (45 ml) and brainstem compression. **b** CT-scan showing acute hydrocephalus. **c** Left semi-lateral position for posterior fossa surgery. **d** Prevention of cannula dislodgment and patient's safety was ensured by: (1) adequate cannula fixation to the patient by a surgical thread and to the operative table by a hook forceps (thick arrow); (2) full access to cannula during procedure (fine arrow); (3) appropriate personnel and support including cardiac surgeon and ECMO perfusionist in the operating room during neurosurgery

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