Central venous catheter in a morbidly obese patient — a sequence of mistakes and coincidences leading to the patient being exposed to the risk of severe complications

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Editor,

We would like to present a case of incorrect approach to central vein catheterisation in a morbidly obese patient. A sequence of mistakes and coincidences including the wrong approach, mistaken recognition of placement of central venous catheter in chest X-ray, and wrong interpretation of symptoms led to an unnecessary replacement of the catheter that exposed the patient to additional risk of severe complications.

A 30-year-old female patient, body mass 132 kg, height 176 cm (BMI 42.6 kg m⁻²) was admitted to the university hospital for elective bariatric surgery: open Roux-En-Y-gastric bypass. Operation was performed under general anaesthesia using sevoflurane, fentanyl, midazolam and atracurium. A double-lumen central venous catheter through the right subclavian vein was inserted under general anaesthesia. The placement of the tip of the catheter was confirmed by ECG monitoring during catheter insertion. Depth of the catheter was 16 cm from the surface of the skin. Blood could be aspirated from both lumens.

After transfer to PACU, a persistent tachycardia was observed: 110–120 bpm. The patient complained of slight shortness of breath and pain in the abdomen. The pain score was estimated at 3–4 using VAS. The surgeon suggested that tachycardia may be connected with the central venous catheter - the tip of the catheter may be too deep and stimulating the right atrium, causing supraventricular arrhythmia. An X-ray of the chest was performed (Fig. 1). Because of the technical problems — the patient was very obese — the X-ray was not clear. However, the radiologist described the place of the tip of the central venous catheter in the right atrium. The surgeon decided to pull the catheter 4 cm up. Tachycardia was still present, and the patient started to complain of pain during injection through the proximal lumen. Blood could be aspirated only through the distal lumen. Because at this moment a peripheral vein access was easy to establish, the surgeon decided to remove the central vein catheter. The site of CVC insertion had no symptoms of infection.

Two days later, the patient’s general condition worsened. She suffered from fever, abdominal pain and tachycardia. An anastomosis dehiscence was suspected. The patient was operated upon and the diagnosis of peritonitis was confirmed. The patient was transferred to the ICU for treatment of sepsis. A central venous access was needed, so the anaesthesiologist decided to put a catheter through the jugular vein under USG control. The procedure was successful, and the patient was cured in the ICU. She was discharged home two months later.

There have been a number of reports about possible complications of central venous catheterisation in obese patients [1–3]. The main problem in obese patients, apart from technical problems with vein puncture, lies in estimating the appropriate length of the catheter and confirming tip placement [3]. It is recommended to use USG for catheterisation and the right jugular vein is recommended as the first choice [4]. In the described case, it was an anaesthesiologist’s decision to perform catheterisation using a subclavian approach. A list of mistakes, coincidences and misunderstandings led to unnecessary removal of the catheter and exposed the patient to additional risk of severe complications.

First of all, catheterisation for elective surgery in morbidly obese (but not only) patients should be performed the day before in the X-ray room, and the proper placement of...
Central venous access in morbidly obese patients: a potential complication.

In conclusion, we suggest that CVC in morbidly obese patients:

1. Should be placed under USG and X-ray control [4].
2. The preferred first choice site is the right jugular vein [3].
3. The tip of the catheter should be placed deep enough without adopting helpful manoeuvres such as pulling down the skin fold. This may require longer needles and longer catheters [3].
4. Catheterisation should be performed under local anaesthesia if possible, not under general anaesthesia.
5. Proper positioning of the morbidly obese patient for CVC is essential to make the procedure effective and safe.

References:

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