FATAL COMPLICATION OF SUBCLAVIAN CATHETER

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A 72-YEAR-OLD CACHECTIC and markedly disoriented male patient was admitted for a right intertrochanteric femoral fracture. He suffered from anaemia, emphysema, hypertension, and cardiac arrhythmias. Three weeks previously, he had undergone fixation of a left intertrochanteric femoral fracture under spinal anaesthesia.

The patient came to surgery for a Jewett nail fixation. He received 500 ml of blood through a 16-gauge Intracath® in the right forearm 90 minutes before leaving the ward. When he reached the operating room, the anaesthetist found the cannula crushed by its plastic sleeve and had to remove it. Because he found no other peripheral veins and wished to monitor the central venous pressure, he placed the patient in Trendelenburg position and inserted a supraclavicular 4½-inch 16G Jelco® catheter.¹ The subclavian vein was entered at the first stroke. The cannula was easily introduced and quickly connected to an infusion of Hartmann's solution. There was no blood return when the bottle was first lowered but when the manoeuvre was repeated a few minutes later, good back-flow ensued. The infusion ran freely.

The patient received 50 mg ephedrine intramuscularly and, still head down, was placed on his left side for an unilateral hypobaric spinal block. At the time of the skin wheal, 5 minutes after the subclavian puncture, the patient emitted a few gasps and his face, neck, and upper trunk assumed a purple hue. A few seconds later, all vital signs disappeared. The surgical team began cardiac massage and ventilation with 100 per cent oxygen through an endotracheal tube, injecting into the subclavian catheter, in divided doses, a total of 2 mg epinephrine, 40 mg methoxamine, 20 gm calcium chloride, and 88 mEq sodium bicarbonate. Resuscitation was abandoned 10 minutes later because of the patient's history and the suspicion of massive pulmonary embolism. The infusion, of which the patient had received 100 ml, was disconnected but the subclavian catheter was left in place.

The autopsy revealed 500 ml of grossly bloody fluid in the pericardial sac and suggested acute cardiac tamponade as the cause of death. About ¼-inch of the cannula protruded into the pericardial cavity through the right wall of the superior vena cava, immediately below the point where the latter pierces the pericardium.

Myocardial perforation and tamponade by CVR cannulae,^{2,3} cardiac catheters,⁴ or pacemakers,^{5,6} and puncture of central veins by peripheral catheters^{4,7} are, of course, well known. This, however, is the first reported instance of vena cava perforation and tamponade by a subclavian catheter. Several authors¹ have ruled out this possibility, since the catheter freely floats in a large venous lumen. Our insertion was extremely easy and free of resistance. While the symptoms of tamponade after myocardial perforation generally develop slowly, this patient's rapid

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death suggests that puncture of the poorly retracting vena cava may be more dangerous than puncture of the myocardium.

The incident prompts several comments:

(a) It emphasizes that central venous catheters can lead to grave incidents and that serious indications only must dictate their insertion.

(b) Though several teams¹ favor the Rochester needle for central venipuncture because they find it easy to insert and too short to enter the heart, its stiff and sharply beveled cannula may puncture the veins more readily than the commonly used Intracath®. Several manufacturers are now developing a subclavian catheter. A blunt tip and great compliance are features that we would recommend for their product.

(c) Central venous pressure catheters can cause cardiac tamponade. Recognized, quickly diagnosed by pericardial puncture, and vigorously treated, this complication need not be fatal.^{2,5}

SUMMARY

A case is presented, where a Rochester needle, easily introduced into the subclavian vein and producing good venous blood return, in fact perforated the superior vena cava inside the pericardium and within a few minutes caused fatal cardiac tamponade.

RÉSUMÉ

Nous présentons le cas d'un cathéter facilement introduit dans la veine sous-clavière et produisant un bon retour de sang, mais qui en réalité avait perforé la veine cave supérieure à l'intérieur du péricarde et qui, en quelques minutes, produisit un hémopéricarde fatal.

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