Jugular Vein Cannulation for Hemodialysis Access

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Dear Sir,

In 1969, Erben et al. [1] described the first routine use of subclavian vein cannulation for hemodialysis. More recently it was popularized by Uldall et al. [2], in conjunction with the development of a 'single-needle' subclavian hemodialysis catheter. Nowadays, it is being widely used all over the world. Its advantages are considered to be rapid insertion, no impairment of patient's mobility, and no damage to blood vessels that could result in arteriovenous fistulas [3]. Minor complications such as local pain or hemorrhage, arterial puncture, and catheter thrombosis cause usually no problems. Nevertheless, several serious complications such as sepsis, thrombosis of the subclavian vein, pneumothorax, and life-threatening events have been reported [4-6].

During a time period of 8 months (December 1986 to July 1987), a total number of 120 hemodialysis catheters (Med-West Inc., Salt Lake City, Utah, EEUU) were placed in 89 consecutive patients that required dialysis for acute renal failure or in patients with chronic renal failure who were awaiting vascular access. Ninety catheters were inserted by percutaneous puncture of a subclavian vein using Seldinger technique, and the remaining 25 on the internal jugular vein by the same technique. All catheters were inserted only by members of the Nephrology Service; rigorous aseptic technique was employed at the time of catheter insertion, and catheters were used only for hemodialysis.

At the time of insertion six pneumothoraxes were recorded, all of them secondary to subclavian vein cannulation, as well as 5 artery punctures (4 to subclavian and 1 to carotid artery). Vein thrombosis was clinically evident and confirmed by phlebography in 2 cases, one each vein (table I).

Seven cases of bacteriemia were registered, 3 were due to *Staphylococcus epidermidis*, 3 to *Staphylococcus aureus*,

Table I. Mechanical complications

and 1 to *Streptococcus faecalis*. In 5 out of the 7 patients the origin of the sepsis was the subclavian catheter, and in 2 it was the jugular catheter (table II). The mean duration time of the catheters was 19 days for subclavian versus 22 days for jugular catheters.

Subclavian vein cannulation for acute hemodialysis has become a well-accepted technique for establishing rapid temporary dialysis access. Unfortunately, acute (pneumothorax, hemothorax, air embolism, brachial plexus injury, etc.) and delayed (bacteriemia and thrombosis)

complications associated with the insertion procedure continue to occur [4,5]. Recently, a high incidence of asymptomatic subclavian vein thrombosis has been recognized associated with prolonged subclavian vein cannulation, that might compromise the definitive vascular access [6]. Evaluation of our patients who needed immediate angioaccess for dialysis demonstrated that the internal jugular vein cannulation represents a rapid and safer alternative to subclavian access. Jugular vein cannulation would be of special interest in patients with thorax alterations, in emphysematous patients, patients submitted to positive ventilatory pressure, and all patients with high risk for developing complications associated with subclavian cannulation.

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Table II. Bacteriemia associated with catheters

Case	Age	Sex	Organism	Duration of catheterization days	Vein	Evolution
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J	65	M	Staphylococcus epidermidis	16	S	cured
2	17	M	Staphylococcus aureus	15	S	cured
3	57	F	Strep tocoecus faeca lis	21	Si	cured
4	72	F	Staphylococcus aureus	8	J	septic arthritis
5	83	F	Staphylococcus epidermidis	11	S	cured
6	45	M	Staphylococcus aureus	12	J	cured
7	47	M	Staphylococcus epidermidis	15	S	cured

S = Subclavian; J=jugular; M = male; F = female. The patient died during the course of septic arthritis.

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