Subclavian Dialysis Catheter Placement under Sonographic Guidance

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Dear Sir,

Subclavian dialysis catheters are commonly placed by a blind technique in patients needing hemodialysis and may be associated with numerous complications such as pneumothorax, hemothorax, subclavian vein thrombosis, and late subclavian vein stenosis. The use of sonogram allows the operator to puncture the subclavian vein under direct vision and may decrease the rate of complications.

The patient is connected to a cardiac monitor and placed in a Trendelenburg position. A roll of towel is placed between the shoulders and the subclavian fossa is scanned with a 7-MHz sector scan transducer. The subclavian vein is located superficial to the subclavian artery and is distinguished from the latter by its thin wall, nonpulsatile nature, easy compressibility by the probe and distention with the Valsalva maneuver. Finally the Doppler is used to ascertain the artery from the vein. The initial scanning of the subclavian fossa familiarizes the operator with the anatomy of the area. Next, the subclavian area is prepped and draped and an area of skin 2 cm lateral and inferior to the transducer is anesthetized with a 21-gauge needle using 1% xylocaine. A sterile bag is slid over the transducer and the subclavian vein again located. A 14-gauge, 15-cm needle mounted on a Luer lock 10-ml syringe is passed just lateral to the transducer and gradually advanced towards the vein while continuous suction is maintained with real time sonographic monitoring. The entry of the needle into the vein is heralded by a quick return of blood and is confirmed by sonogram. A double lumen subclavian catheter is introduced in the usual fashion and the location of the catheter confirmed in the vein by flushing the catheter with sterile saline during color Doppler monitoring. The catheter is sutured and flushed

with heparin and a chest X ray ordered to rule out pneumothorax.

The above method has been tried in 5 patients and has been successful in 4. In 1 patient who was orthopneic and could not lie flat, the sonographic examination demonstrated the subclavian vein to be collapsed and the procedure was not done. In another patient who had a preexisting internal jugular triple lumen central catheter, the subclavian dialysis catheter was erroneously placed in the jugular vein. This was identified by using color Doppler technique, as noted above, and the catheter placement was immediately corrected. No other complications were encountered. The average time to completion was approximately 30 min. In one obese lady who had multiple arterial punctures during a blind procedure, the

subclavian vein catheter could easily be passed under sonographic guidance in the first attempt.

Sonographically guided subclavian catheter placement seems to be a promising technique and has the potential to reduce the complications associated with the blind procedure. It needs to be evaluated in a larger number of patients.

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