

A case of an abnormal vein of the hand with characteristics of artery

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To the Editor:

We describe a case of an abnormal vein of the hand that had some characteristics of an artery. A 47-year-old, 52-kg male was scheduled for craniotomy and excision of a left temporal tumor. The patient was on IV mannitol and phenytoin for 3 weeks. After induction of anesthesia, an 18G cannula was secured on the dorsum of the left hand. Inadvertent intraarterial cannulation was suspected because of back flow of blood in the IV line. When the cannula was connected to an arterial transducer, it produced a wave form similar to an arterial waveform with a mean arterial pressure (MAP) of 61 mmHg (Fig. 1). Simultaneous pressure measurement in the right posterior tibial artery showed a MAP of 101 mmHg. Noninvasive blood pressure measured on the left arm at that time was 130/95 mmHg. The blood gas analysis of blood drawn through the 18G cannula correlated with that of the arterial blood. Prominent thickened veins were present on the left forearm. Radio-opaque dye injected under fluoroscopic guidance was traced up to the antecubital fossa. Color Doppler of the left hand ruled out the

presence of a superficial artery or AV fistula, and revealed a vein at the site of venous cannulation. The vessel being an artery was ruled out by the absence of pulsatile flow and a comparatively lower MAP. The arterial-like waveform, presence of back flow of bright red blood and the blood gas analysis report go against the findings of a normal vein. Lack of a definite history of trauma/dialysis and Doppler study ruled out the possibility of an AV fistula. The possibility of an aberrant radial artery was ruled out by a lower MAP compared to the true arterial MAP and subsequent Doppler examination. Lakhotia et al. [1] experienced a similar situation, which they described as arterializations of the vein. History of prolonged IV cannulation and the presence of prominent thickened veins on the left forearm point towards a downstream obstruction of venous blood flow. Though we did not check for the presence of proximal venous thrombosis, we suspected that long-term infusion of phenytoin and mannitol would cause arterialization of the distal vein. Probably the stress of continued downstream obstruction led to angiogenesis and formation of new arteriovenous communications [1, 2]. The fact that dye injected forcefully could be traced towards the antecubital fossa points out that the obstruction was incomplete. This case emphasizes that long-term infusion of intravenous fluids and drugs may result in varying degrees of obstructive thrombosis of proximal veins and formation of abnormal venous channels distally. In the presence of back flow of bright red blood in the IV line in a patient with thickened proximal veins, formation of an abnormal venous channel should be suspected and further injection of drugs into the vein should be avoided. If drugs are injected with force there is the possibility of spilling of drugs into the arterial circulation.

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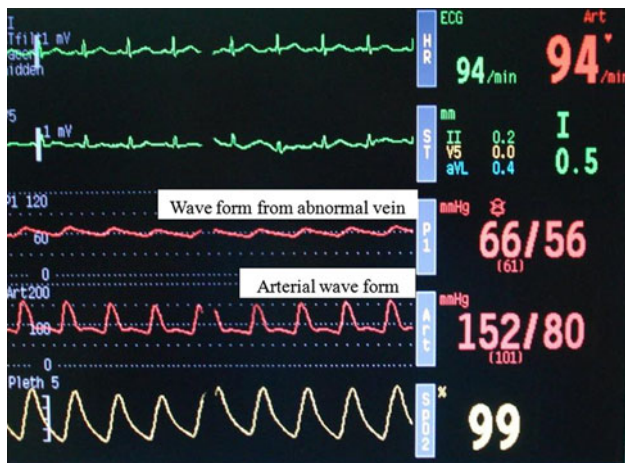


Fig. 1 Monitor showing the waveform of the abnormal vein and true arterial wave form

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