Arterial occlusion following radial artery cannulation

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Summary

A 65-year-old lady, admitted to ICU for septic shock, underwent left radial artery cannulation with 20G cannula for hemodynamic monitoring. She was on mechanical ventilation for severe community acquired pneumonia and was treated with antibiotics and vasopressors (noradrenaline and vasopressin). On the fourth day of arterial cannulation, she developed bluish discoloration of her left hand and digits (Figure 1a), associated with coldness and impaired capillary refill. The other hand did not show any features of compromised circulation. Ultrasonography of left radial artery revealed intraluminal thrombus and absence of color flow in color Doppler (Figure 1b). The radial catheter was removed and she received therapeutic dose of enoxaparin. She expired three days later due to refractory shock.

Literature review

Most commonly chosen site for arterial cannulation is radial artery. The most common complication of this procedure is temporary occlusion of the artery with the incidence ranging from 1.5 to 35%. Usually, the vessel recannulates following treatment with anticoagulants. Permanent occlusion is rare, with the reported incidence of around 0.09%. Multiple factors may determine the risk for arterial occlusion including the size of the catheter used, size of the vessel (usually smaller in females), low cardiac output state and duration of cannulation. Cannulation for longer than 48 to 72 hours increases the risk of thrombosis[1]. Our patient developed radial artery occlusion on the fourth day, was in profound shock and was a female. Pre-procedural use of Barbeau test may help to select patients with impaired ulnar collateral

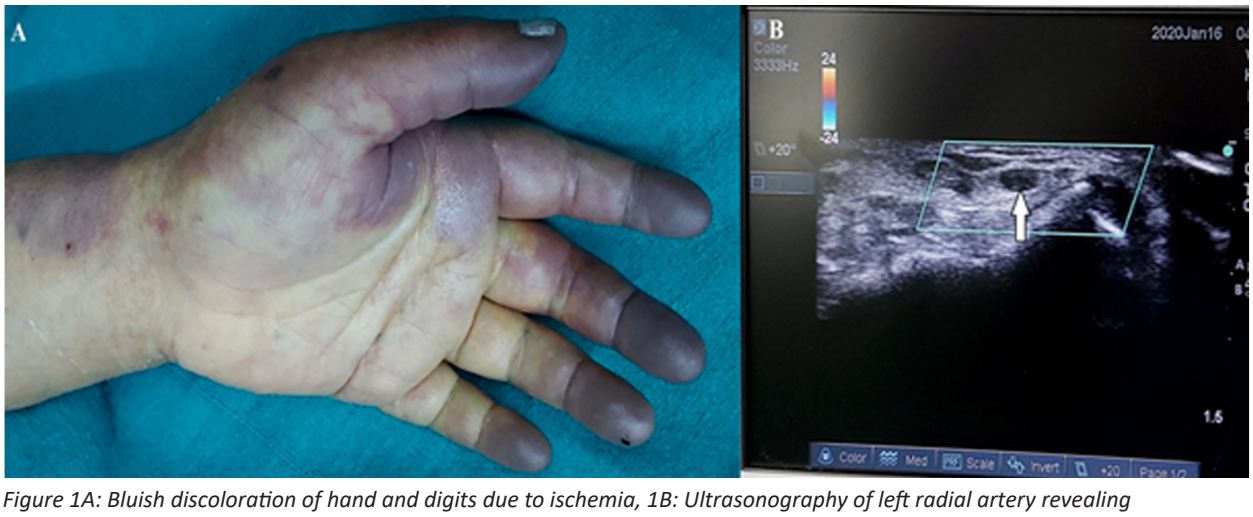

Figure 1A: Bluish discoloration of hand and digits due to ischemia, 1B: Ultrasonography of left radial artery revealing intraluminal thrombus (white arrow) and absence of color flow in color Doppler

circulation[2]. It is uncertain whether use of heparin in maintenance flush solution can decrease the risk of arterial occlusion[3].

References

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