Clinics in Surgery

Case Report
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Unexpected Death after Isolation of the Innominate Vein

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Abstract

Venous gangrene id defined as gangrene of the limp with a patent arterial tree but with occlusion of the venous network. This report refers to a 65 year old female with history of renal failure under dialysis and an arteriovenous fistula on the left arm. During salvage operation after puncture and severe laceration of both the left internal jugular and innominate vein the above mentioned veins were ligated. This lead to lethal venous gangrene of the left arm due to the obstructed outflow track of the massive blood flow from the fistula. In many cases, the innominate vein is ligated during cardiac operations. The case of this patient teaches us to be extremely cautious if a fistula is present.

Keywords: Venous gangrene, Arteriovenous fistula, Innominate vein

Introduction

Venous gangrene id defined as gangrene of the limp with a patent arterial tree but with occlusion of the venous network [1,2]. The most common cause is phlegmasia cerulea dolens (massive thrombosis of the veins). Other causes include phlebitis, pelvic infections, abdominal carcinoma and some blood diseases. The upper limp is rarely involved. Furthermore, the mechanism we describe in this article, which lead to the death of the patient has not been reported in the past. This report refers to a 65 year old female with history of renal failure under dialysis and an arteriovenous fistula on the left arm who developed a fatal venous gangrene after ligation of the innominate vein.

Case Presentation

A 65 year old woman with history of renal failure under dialysis was admitted in hemorrhagic shock after an attempt of inserting a central venous catheter via the left internal jugular vein. The computed tomography showed a massive left hemothorax with the catheter running through and out of the left internal jugular vein and the left innominate vein. The patient underwent emergency sternotomy. The catheter was removed and the left jugular and innominate vein were divided and ligated. The left hemithorax was drained and the patient was transferred to the Intensive Care Unit (ICU) under respiratory and inotropic support. During the following hours the patient started to recover and was extubated the following day. During the second post-operative day the patient showed signs of anaerobic metabolism with a steady increase in serum lactate concentration with no signs of low cardiac output as assessed with trans-thoracic echo or signs of abdominal or regional ischemia as assessed with contrast computed tomography. Lactate elevation was refractory to any measures taken in the ICU. The patient was re-intubated and put in hemodialysis. Vasocontrictive agents were added to the treatment to maintain adequate mean arterial pressure.

Figure 1: The patient with venous gangrene of the left upper extremity, with severe edema, well circumscribed purplish-black areas, cyanosis and blistering.

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The patient continued to deteriorate. After careful examination we noted signs of ischemia and edema of the left upper extremity and the left hemithorax (Figure 1). Subsequent clinical examination and doppler of the left upper extremity showed signs of venous gangrene. The patient had an arterio-venus fistula on the left arm, used for dialysis sessions, which was not taken into account during the salvage operation. The massive blood flow from the arterial part of the fistula with an occluded outflow track was sufficient to create this fatal upper limp gangrene.

Discussion

The innominate vein is often ligated and divided during cardiac operations, especially in cases of a sub-optimal approach to the aortic arch. In general this approach is considered safe by many surgeons [3] due to collateral venous drainage formation [4].

Conclusion

In cases, like the one we describe in this manuscript, one should take in account the existence of an arteriovenous fistula on the left arm which will probably lead to fatal complications.

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