

Complication of Hemodialysis Access: A Case Report of Venous Hypertension

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Abstract- Vascular access for dialysis is essential for these patients with end-stage renal disease, improvements in hemodialysis management have led to extended life expectancy. The creation and maintenance of hemoaccess occupies a significant portion of most vascular and general surgery practices. Venous hypertension due to arteriovenous fistula is usually secondary to venous outlet obstruction. Side to side proximal artery arteriovenous fistula serves as a certain cause of hemodialysis, but it is rarely reported as a peripheral venous hypertension cause. We are reporting a case with developed venous hypertension having dermal injuries in the arm. The patient underwent successful side-to-side radio cephalic fistula creation in the snuffbox a year ago.

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Introduction

Today, the number of ESRD patients has critically increased. Thus, improvement of dialysis techniques promotes the life quality of these cases. In order to undergo dialysis, they are in need of a suitable and efficient arteriovenous fistula for arteriovenous access. This technique was first employed by Brescia-Cimino *et al.*, in New York in 1965 (1). When AVF (arteriovenous fistula) is created, it is possibly followed by complications such as thrombosis, infection of the wound, subclavian steal syndrome, fistula aneurysm, etc. (2,3). According to various studies, venous

hypertension is one of the most prevalent complication following AVF (4).

Case Report

Our patient was a 17-year-old female with a history of nephritic syndrome since eight. From a year ago to the present, because of CKD; she has been under hemodialysis through upper-left snuffbox. She referred to us because of having pain various dermal injuries, and upper-quadrant distal edema (Figure 1A and B).

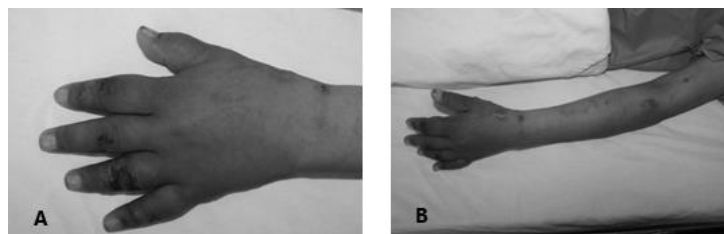


Figure 1. Various dermal injuries, and upper-quadrant distal edema due to venous hypertension

On examination, it was found that she suffered from distal upper extremity edema, pallor, kinetic deficiency,

tactile tenderness, protruding superficial veins, and dermal gangrene of the fingers.

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Reviewing the history of the patient, it was found that she had undergone fistula insertion surgery in another health center. In the first time, fistula insertion had been done in the left antecubital region that was not a success. In the second time, after the insertion had been done in the snuffbox of the same organ; because of proximal venous obstruction of the new fistula, venous hypertension revealed in the case.

Surgically, the arteriovenous fistula in the patient was tied up, and a new fistula in the upper region opposite to the snuffbox was inserted. A month follow-up after the surgery showed that dermal gangrene and upper extremity edema were completely cured.

Discussion

Venous hypertension is a complication of AVF which is due to stenosis or obstruction of proximal venous at 2.3 cm from fistula attachment. It is demonstrated with fingers and hand edema, decrease in physical movements; and, in severe stages, with cyanosis and tumescence of the fingers. It can even show itself in the form of venous gangrene.

According to previous studies, the prevalence of venous hypertension following the implementation of arteriovenous fistula in the snuffbox is about 3% (2,4).

In our specific case, considering that the patient had a history of implementing fistula in the antecubital spot and later thrombosis of the fistula inserting a new fistula in the distal part of the same organ-without examining

proximal venous system-caused venous hypertension in the same spot.

Various studies have mentioned lack of a suitable proximal venous bed for the insertion of fistula as the main cause of venous hypertension (2,4).

The patients who are AVF insertion candidates had better have preclinical assessments to determine venous drainage, in addition to routine clinical examinations if they have a history of manipulation or intervention in the venous proximal system for determining fistula insertion spot.

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