A Giant Seroma Developed 3 Months After Femoral Embolectomy In A Chronic Renal Failure Patient
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Citation

Abstract
Although postoperative seroma formation is a rare complication, it is a bothersome and hard-to-treat situation when occurred. In daily practice of vascular surgery, postoperative use of intravenous heparin is indicated as a risk factor for postoperative symptomatic seroma development. According to the literature, a significant cause that we face this problem with increasing incidence may be the postoperative use of high dose heparin. In this study, we present the diagnosis and treatment under the light of literature of a giant seroma case developed 3 months after the femoral embolectomy that was administered intermittent heparin due to a continuing hemodialysis program. We recommend to review the postoperative use of heparin as it is defined as a significant factor in etiology and immediate surgical approach should be the treatment of choice.

INTRODUCTION
Seroma is characterized by sterile fluid collection within a fibrous pseudomembrane developed after vascular surgical procedures under the skin incision or around artificial vascular grafts (1). In daily practice of vascular surgery, thrombosis, infection and pseudoaneurysms are among frequent complications. Although seroma formation is seen relatively rare, due to its serious consequences, its diagnosis and treatment require particular attention.

CASE PRESENTATION
Our case is a 72-year-old male who has been under hemodialysis program for 3 years due to chronic renal failure. He underwent a successful femoral embolectomy in our clinic due to acute arterial occlusion developed on his right lower limb 3 months ago. He was hospitalized due to increasing swelling at his right groin region(Figure 1). Physical examination revealed a non-pulsatile mass of cystic nature with dimensions of 10x10x5 centimeters at right inguinal region. He had been admitted first by another health institution. A giant cystic mass corresponding to seroma had been detected by ultrasound and he had been referred to our clinic (Figure 2). Color Doppler ultrasound pointed out a cystic development of 87x58 millimeters in diameter without any sign of vascularization(Figure 3). This mass had a septated cystic configuration. Intraarterial DSA performed to investigate his disease of arteriosclerosis obliterans (ASO) also visualized this development (Figure 4).

Figure 1
Figure 1: Image of seroma mass of our case at the time of admission
According to these angiographic images, no interventional therapy for the underlying occlusive disease was planned. Afterwards, needle aspiration of this serous fluid within the seroma was performed and subsequent compressive bandages were applied for 3 days. Aspirated fluid was measured as about 150 milliliters and no microorganismal growth was detected microbiologically. Biochemical investigation revealed that this collection was transudate (Glucose=6 mg/dL, Protein=4.1 g/dL, Potassium=5.74 mmol/L, Albumine=2.5 g/dL, Aspartate transaminase=38 U/L, Lactic dehidrogenase=6118 U/L, Cholesterol=69 mg/dL). On the fourth day after the aspiration our case was discharged with complete recovery planning to continue the hemodialysis program thrice a week with administration of lower doses of heparin. At the first month follow-up visit he was examined finding that his wound was clean and cystic mass almost totally disappeared (Figure 5).
DISCUSSION

Seroma is defined as a clear and sterile fluid collection surrounded by a fibrinous pseudomembrane developed around the graft or intervention site of the intervened vessel. The content of seroma is bacteriostatic and therefore infected scarcely. In our case no microorganism grew in seroma fluid during bacteriologic investigations.

Seroma formation is a rare complication and its incidence ranges between 0.3 to 4.2%. Studies suggest that immunological factors causing fibroblast inhibition, amount of blood flow through the intervened vessels, systemic heparin use, traumas interfering with graft porosity, contact of intervened vessels with some chemical agents (organic solvents, povidone iodium, antibiotic solutions, heparin) cause an imbalanced medium to form seroma. Berger and his colleagues stated that postoperative intravenous use of heparin is a risk factor for symptomatic seroma formation. According to the knowledge of literature, in our case seroma formation depends mostly on postoperative use of high dose heparin during hemodialysis procedures.

Diagnosis of seroma is made mostly by physical examination and Duplex ultrasound. Computerized tomography and magnetic resonance imaging are beneficial noninvasive methods. Hematoma and pseudoaneurysm should be considered in differential diagnosis.

Spontaneous regression is seen in 65% of diagnosed seroma cases in literature. Treatment of symptomatic seroma remains controversial. But cases with severe symptoms and life threatening situations require intervention. If the diagnosis is delayed even spontaneous fistulization to the skin may be seen. Aspiration and/or resection may be adequate in treatment. But in recurrent situations, renewal of the vessel in order to create a protein coat are recommended.

Finally, although seroma is a rare complication, it is important because of the potential to increase morbidity rate and to cause mortality. We think that avoiding mechanical and chemical injuries is necessary. We recommend to review the use of intermittent heparin after vascular interventions as it is shown to play a major role in pathogenesis. We also want to emphasize that treatment of formed seroma should be carried out primarily when necessary.

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