

Topical Heparin Therapy in Stasis Ulcer: A Case Report

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Received May 23, 2014; Revised January 10, 2015; Accepted January 13, 2015

Abstract Venous leg ulcers are the late and severe clinical form of chronic venous disease. Superficial venous system, deep venous system or perforating veins between them which are affected by reflux, obstruction or inability of the muscle pump, play an important role in pathophysiology. Compression bandages and wound care are the basis of treatment for venous ulcers. For ulcers which do not respond to these treatments, surgical procedures may be considered. There is a need for a multidisciplinary approach for the treatment and follow-up of venous leg ulcers. Cutaneous lesions like stasis ulcer are common in patients with chronic renal failure. Healing of chronic ulcer is difficult and can take time. Here we emphasized the effects of topical use of un-fractionated heparin on wound healing of an elderly male patient with chronic renal failure.

Keywords: *stasis ulcer, chronic renal failure, heparin*

Cite This Article: Özlem Keskin, Ahmet Karagöz, Kadir Öymen Hançerlioğulları, Alptekin Tosun, and İlker İlhanlı, "Topical Heparin Therapy in Stasis Ulcer: A Case Report." *American Journal of Medical Case Reports*, vol. 3, no. 1 (2015): 18-19. doi: 10.12691/ajmcr-3-1-7.

1. Introduction

Venous ulcers are wounds that occur due to insufficiency of venous valves. They usually determined at the legs and may lead symptoms. Ulcer is defined as a focal lesion characterized by loss of tissue in dermis and epidermis. Wound healing depends on many factors such as hemodynamic instability of the patient, and type and localization of the lesion. Various oral, parenteral and topical agents are used in treatment. Wound care and treatment is crucial with sterilization, debridement, prevention of infections and medical dressing. Heparin has antiinflammatory, neoangiogenic and epithelising effects in addition to its anticoagulant potency. It also participates in restoration of collagen [1,2]. In this paper we reported the outcomes of topical heparin therapy in a patient with stasis ulcer.

2. Case Report

A 73 years old male patient complaining about left leg pain with swelling, rubor and an open wound in the front face of the left leg was examined in polyclinic. He defined a history of trauma of the left leg due to strike of a tree branch about 5 months ago. He had been using coumadin 2,5 mg/day for atrial fibrillation and an antihypertensive agent. He had bilateral total knee arthroplasty five years ago. He had no history of diabetes mellitus. He has been using topical steroid therapy for two weeks proposed by

dermatology clinic but no benefit was provided. In physical examination, there was a 1x1 cm sized ulcerative wound with fibrine in front face of the left leg accompanied by rubor and tenderness (Figure 1). The lesion was also painful. Onychomycosis was present in toe nails. Left ankle was 5 cm wider compared to right one. Laboratory findings are presented in Table 1. Lower extremity venous Doppler revealed generalized edema in cutaneous and subcutaneous tissue and also reported that deep veins were intact. Arterial Doppler ultrasound detected intimal thickening in patches in bilateral femoral arteries, proximal part of deep femoral arteries, superficial femoral arteries and popliteal arteries. The patient was consulted to nephrology clinic and chronic renal insufficiency was diagnosed. Controlled fluid intake and close follow up of fluid balance were advised.

The leg was washed with distil late water 25000u/5ml, unfractionated heparin was performed directly to the wound after ulcerous part was debrided and non living tissue was removed. Coumadin dosing was rear ranged in order to achieve optimal anticoagulation. INR was between 2-3 as desired. Appropriate antibiotherapy was carried out for MRCNS identification in wound culture. His complaints were relieved after second day of hospitalization. Deep eczematosis cracked lesions disappeared and ulcerous wound became smaller. Laboratory findings in the 4th day of hospitalization are presented in Table 1. On the 10th day of hospitalization, generalized eczematosis lesions disappeared completely. Wound became smaller in ulcerous region and granulation tissue filled the base of the wound. Pain and tenderness also disappeared and the patient was discharged with follow up suggestions.



Figure 1. a: First day, b: 48. hours, c: Discharged

Table 1. Laboratory values

	WBC	Urea	UA	Cr	ESR	CRP
Arrival	11200	81.1	8.69	1.88	83	2
4th day	7600	55.3	7.9	1.49	52	0.9

WBC: White blood cell, UA: Uric acid, Cr: Creatinin, ESR:

Sedimentation, CRP: C-reactive protein

*** Informed consent was obtained from patient.

3. Discussion

Chronic venous stasis and venous ulceration is a table caused by venous hypertension. Mechanism is not well known. There are many factors affecting wound healing. Being over the age of 70 can adversely affect the normal wound healing. This is because of the decrease in production of the non-collagen extracellular matrix proteins and increased rates of additional diseases [3]. Pain causes vasoconstriction by the local discharge of adrenaline, and noradrenaline, so the disrupted feeding affects wound healing adversely. Systemically uremia disturbs the collagen synthesis, and delays the wound healing. In our case, being 73 years old, having pain, and chronic renal failure are the negative factors for wound healing. Infection, as indicated in [Table 1](#) (elevated CRP, and sedimentation levels) and tissue edema have also had a negative impact on wound healing. All wounds heal in the same basic principle. This includes three stages; inflammation (1-5 days), proliferation (5-14 days) and maturation (after 14th day). In our case, clinical improvement has been visible by 48th hour ([Figure 1b](#)). Waiting 3 days for culture results to start the appropriate antibiotic therapy showed the effectiveness of topical heparin better. The most important factor affecting wound healing is the tissue blood flow (oxygen saturation). In well vascularized and oxygenated wounds rapid improvement is seen without problems. In recent years, topical administration of heparin in burn cases has been used widely [1,2]. However, cream or gel forms are preferred. In the treatment of vascular injury heparin-containing creams are being used from formerly [mucopolysaccharides polysulfate

(hirudoid forte cream - gel ®), heparinoid (Iasonil Pomade ®)] De Cock R. et al. also studied on the use of topical heparin in eye lesions and suggested that intensive and early use of topical heparin may improve therapy results in ligneous conjunctivitis [3]. Anticoagulant, anti-inflammatory, neoangiogenic, collagen restoring and epithelizing effects of topical heparin promote wound healing. In our case, effect of heparin was observed with the improvement of erythema, edema, tenderness, and pain. Based on this observation, we did not need to receive pathological material. Heparin (and related compounds) can protect endothelium from free radical damage, and therefore, can be used in prophylaxis of inflammatory and ischemic injury [4,5]. The patient's ulcer wound recovered in a short time, and symptoms regressed rapidly. In addition to the oral, and parenteral treatment, contribution of topical heparin therapy to wound healing has been demonstrated.

Statement of Competing Interests

Nothing to declare.

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