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Martorell ulcer. An innovative approach to its management: A case report

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Case report

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Background

INTRODUCTION: Martorell's ulcer (hypertensive ulcer) is an uncommon, but not infrequent, cause of leg ulcers, that usually occurs in hypertensive patients. The key features of this lesion include disproportionate pain compared to the size of the ulcer, ulcer located on the anterior distal two thirds of the leg in addition to significant vascular disease. Martrell's ulcer presents both a diagnostic as well as management challenge. The aim of the current study was to present a case report of Martorell's ulcer with emphasis on management.

CASE PRESENTATION: We present a case of a 79-year-old white female who was born and raised in South Africa, who had been referred for management of a left leg anterior lower third ulcer. She has been hypertensive for over 20 years on medication and reported poor compliance. Her chief complaint during this period was a very hurting ulcer on the lower anterior third of the left leg, measuring 2X4 cm, that had been present for over 12 months. The patient was started on topical creams containing papain, betamethasone, mupirocin as well as silver nitrate containing cream.

CONCLUSION: This case illustrates the effectiveness of the locally combined therapy involving topical application of Papain containing ointment, betamethasone, mupirocin as well as silver nitrate containing creams.

Martorell's ulcer (hypertensive ulcer) is an uncommon, but not infrequent, cause of leg ulcers, that usually occurs in hypertensive patients. The key features of this lesion include disproportionate pain compared to the size of the ulcer, ulcer located on the anterior distal two thirds of the leg in addition to significant vascular disease. Females are more affected than men and is usually associated with poorly controlled hypertension. First described by Martorell in the 1940s, most sufferers are in their 50s and 60s, with a reported age range of 40-85 years.

Martrell's ulcer presents both a diagnostic as well as management challenge. The diagnosis is usually reached after elimination of all other causes. Furthermore, response to treatment is usually slow and unsatisfactory. Hypertensive ulcer is usually managed by blood pressure lowering agents as well as surgical intervention for wound therapy. The authors present a case of Martorell's ulcer with emphasis on management.

Venous stasis and arterial insufficiency have been documented as the commonest causes of lower limbs ulcers (Lima Pinto et al., 2015). Martorell's ulcer, which is also known as hypertensive ulcer, is basically an ischemic lesion that is typically due to an impediment involving the small arterioles of the complications of arterial hypertension was first documented by Martoell. The clinical criterion for the diagnosis of the hypertensive ulcer as documented by Martorell was: lower limbs diastolic arterial hypertension, nonexistence of arterial calcifications, location of the ulcer in the medial side of the distal third of the lower limbs, absence of chronic venous insufficiency, hyperpulsatility of the arteries of the lower limbs, pain out of proportion especially when in the horizontal position, symmetrical lesion, residual hyperpigmentation of previous ulcerations in the inner side of the inferior limb as well as higher occurrence in women (Henderson et al., 1995).

Trauma may precede the formation of Martrell's ulcer. However, authority has indicated that the pathogenesis involving matrell's ulcer could be related to the local tissue factors, primarily those involving the microvasculature. This is in contrast to the pathology that is usually involved in most peripheral vascular disease, whereby the pathology lies in the large vessels.

Uncontrolled pressures lead to arteriosclerotic changes involving the central elements of the middle layer cells in the vessels with thickening of the elastic lamina. At the microscopic level, hyalinosis leads to the proliferation of dermal arterioles lumen diameter. This increase in stenosis of the arterioles lumen, leads to elevated vascular resistance as well as diminished

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perfusion pressure of the skin (Davison et al., 2003; Choucair et al., 2001). Clinically, the matrell's ulcer can present with necrotic wound bed, varying depths as well as irregular edges. Satellite lesions, if present, may signify additional cutaneous ischemia.

Proposed treatments are antihypertensive therapy, diuretics in addition to surgical intervention of the wound.

Case report

We present a case of a 79-year-old white female who was born and raised in South Africa, who had been referred for management of a left leg anterior lower third ulcer. She has been hypertensive for over 20 years on medication and reports poor compliance. Her blood pressures had remained consistently elevated. Her chief complaint during this period was a very hurting ulcer on the lower anterior third of the left leg, measuring 2X4 cm, that had been present for over 12 months. The ulcer had demarcated margins, the perilesional skin was hyperemic, the ulcer was covered with exudates and was extremely tender to palpation. Peripheral arterial pulses of the posterior tibial artery was palpable bilaterally.

Secondary survey was grossly unremarkable, except for the hypertension. Blood pressure was 175/90 on the left arm and 169/84 on the right arm.

A plain left leg radiograph was performed which ruled out osteomyelitis. Furthermore, bilateral lower limbs Doppler was performed and showed arterial thickening and irregularities and with normal bilateral flow. An ultrasound was performed and demonstrated mild arteriopathy, but with good peripheral flow.

An incisional biopsy specimen of the ulcer was taken for histopathological examination, which revealed a nonspecific chronic inflammation process with ulceration, which are features consistent with Martorell's ulcer. Clinical examination that was backed up with laboratory investigations further confirmed hypertension as the source of the ulcer. The local dressings were made with petrolatum and the ulcer progressed with healing

The patient was managed as an inpatient with Diuretics combined with ACE inhibitors for blood pressure control. For the management of the ulcer, the patient was started on betamethasone, mupirocin and silver nitrate containing creams as well as topical Papain containing ointment.

After 6 days, the blood pressure was under control and the patient was discharged. The patient was followed up twice weekly for 12 weeks.

After about 4 weeks, the wound started epithelializing. Four weeks later, the size of the wound had reduced to about 1X1.5 cm. The patient was further followed up for another 4 weeks during which the ulcer closed.

Discussion

Martorell's ulcer is an unusual type of ulcer that is associated with hypertension. The commonest histological characteristics include hyalinization and thickening of the elastic lamina. All this leads to narrowing of the lumen diameter. Despite trauma being one of the predisposing factors for martrell's ulcer, intimal hyperplasia is key for ulcer formation (Leu et al., 1992). The elevated pressures on the other hand fuels endothelial remodeling with vascular wall thickening. This eventually leads to blood flow obstruction. If this obstruction continues, perfusion is compromised to a level whereby cutaneous ischemia occurs, combined with ulcer formation and epidermal necrosis (Duncan et al.,198).

In order to ensure healing of the ulcer, various therapies in combination is key. Blood pressure control helps alleviate vascular damage in addition to ensuing good perfusion. Blood supply is key as it ensures the delivery of oxygen and other raw materials including growth factors to the ulcer site in exchange of toxic products of metabolism from the ulcer.

The gold standard treatment for the hypertension are calcium channel blockers and or angiotension converting enzymes inhibitors. Beta blockers are contraindicated since they are known for reducing cardiac output. In addition, patients being managed for martrell's ulcer need also to on prophylactic anticoagulants.

Surgical management may involve debridement and secondary closure or skin graft. Lesions that cannot be closed secondarily will benefit from skin grafting.

Furthermore, pain can be controlled by over the counter painkillers e.g. NSAIDS. However, severe pain may require administration of opioid analgesics. Spinal cord stimulation therapy can also be used in very severe cases for management of pain

It is also important to note that personal behavior change e.g. cessation of smoking, avoiding trauma, wearing compression stockings has a positive bearing on the healing trajectory of martorell's ulcer.

Conclusions

In the current case discussed, the patient demonstrated four of the seven criteria set up by Martorell. This made the patient to undergo other additional tests. The additional tests served to exclude the other causes of ulcer. The bilateral lower limbs Doppler ruled out any form of coagulopathies or venous insufficiencies as being the cause of the ulcer. The histopathological examination on the other hand demonstrated features consistent with martorell's

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ulcer. The current patient underwent dressing change bi-weekly within the first week of hospitalization. After discharge, the dressing change was done after every 5 days. After controlling the blood pressures via oral hypertensive agents, the normalized blood pressures facilitated wound healing of the ulcer.

This case illustrates the effectiveness of the locally combined therapy involving topical application of Papain containing ointment, betamethasone, mupirocin as well as silver nitrate containing creams. Successful healing of the ulcer as well as pain management was achieved without surgical intervention. The enzyme papain performs the enzymatic debridement and hence prepares the wound bed for the healing process to kick off. Betamethasone on the other hand is a steroid while mupirocin is an antibiotic. The antibiotic help clear local infection while the steroid prevents continued inflammation, which usually leads to chronicity of a wound. Furthermore, silver nitrate is bactericidal.

We also recommend that if a hypertensive patient presents with an ulcer or a wound in the lower limbs, a differential diagnosis of martorell's ulcer should always be entertained, especially if the ulcer is very painful.

Conflicts of interests

The authors have no conflicts of interest to declare that are relevant to the content of this article.

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