Case Report

Morel-Lavallée Syndrome: Report of a case successfully treated in a secondary hospital

Síndrome de Morel-Lavallée: Relato de caso tratado com sucesso em hospital secundário

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■ ABSTRACT

The Morel-Lavallée injury is described as a soft tissue injury secondary to trauma with the shearing of the skin and subcutaneous cellular tissue against the muscular fascia without loss of skin continuity. The diagnosis is confirmed with the aid of imaging exams, with magnetic resonance imaging being the most specific exam. Treatment is multimodal, depending on a variety of surgical techniques, antibiotics, and resuscitation and supportive measures. A 36-year-old man, victim of multiple traumas, developed a complex injury to the lower limb and sepsis, requiring varied surgical approaches and clinical supportive treatment. We evaluate the importance of the various strategies employed, timing, and impact on patient outcomes. We conclude that the management of Morel-Lavallée syndrome is complex but can be performed in a secondary hospital.

Keywords: Multiple trauma; Soft tissue injuries; Plastic surgery procedures; Degloving injuries; Skin transplantation.

■ RESUMO

A lesão de Morel-Lavallée é descrita como uma lesão de partes moles secundária a um trauma com cisalhamento da pele e tecido celular subcutâneo contra a fáscia muscular sem perda de continuidade da pele. O diagnóstico é confirmado com auxílio de exames de imagem, sendo a ressonância magnética o exame mais específico. O tratamento é multimodal, dependendo de variadas técnicas cirúrgicas, antibióticos e medidas de ressuscitação e suporte. Homem de 36 anos, vítima de politrauma, evolui com lesão complexa no membro inferior e sepse, necessitando de abordagens cirúrgicas variadas e tratamento de suporte clínico. Avaliamos a importância das várias estratégias empregadas, momento oportuno e impacto no desfecho do paciente. Concluímos que o manejo da síndrome de Morel-Lavallée é complexo, mas pode ser realizado em hospital secundário.

Descritores: Traumatismo múltiplo; Lesões dos tecidos moles; Procedimentos de cirurgia plástica; Desenluvamentos cutâneos; Transplante de pele.

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INTRODUCTION

Morel-Lavallée injury (LML) is a rare and potentially serious condition characterized by an accumulation of fluid and necrotic tissue between the skin and underlying muscular fascia caused by a shear force. Although it is an uncommon event, it is important to recognize the signs and symptoms of the injury for early diagnosis and treatment.

The injury is often associated with high-energy trauma, such as car accidents, falls, or sports injuries, and most commonly affects areas of bony prominence, such as the thighs, hips, and lower back[1]. As it is an uncommon injury, there is little statistical data on its prevalence, with an approximate ratio of 2:1 in men compared to women being stipulated, probably due to the greater number of cases of polytrauma in men[2], in

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addition to a prevalence of 8.3% of injury in the context of pelvic trauma[3].

Accurate diagnosis of LML is crucial for adequate treatment and prevention of complications. Diagnosis is typically made through physical examination, clinical history, and imaging tests such as ultrasound (US) and magnetic resonance imaging (MRI). US can reveal an anechoic image amidst a hyperechoic mass, while MRI can show a homogeneous hyperdense lesion, located anterior to the muscular layer and posterior to the hypodermis. However, it is important to emphasize that imaging findings are not specific and must be considered together with the clinical history and physical examination for a correct diagnosis[4].

OBJECTIVE

This article aims to report a successful case in the treatment of Morel-Lavallée lesion in a secondary hospital, highlighting the surgical approach performed and the results achieved.

CASE REPORT

A 36-year-old man with a history of falling from a motorcycle at high speed with an exclusive injury to the right lower limb, presenting only abrasions on the right knee, seeks care at the São Luiz Gonzaga Hospital, in São Paulo-SP, 3 days after the accident, with the appearance of local edema, chills and phlogistic signs. Patient smoker, with no other relevant history.

US of the right lower limb was performed, showing intact skin with thickened subcutaneous cellular tissue with a heterogeneous appearance throughout the right lower limb (Figure 1), in addition to a computed tomography (CT) showing the same changes (Figure 2).

Right at the beginning of hospitalization, the condition worsened, with fever, nausea, increased edema, and tissue necrosis, requiring antibiotic therapy guided by blood culture (piperacillin/tazobactam + oxacillin) associated with escharotomy and debridement of the devitalized tissue in the surgical center after 4 days of hospitalization and again after 19 days (Figure 3).

In the fourth week, debridement of the devitalized tissue was repeated in a surgical center under spinal anesthesia, this time associating a vacuum dressing on the lesion for 48 hours without success in stabilizing the local infectious condition. It was decided to escalate antibiotic therapy to meropenem and polymyxin B for 13 days in conjunction with simple daily washing and dressing changes associated with new debridement of the devitalized and infected tissue weekly for two weeks.

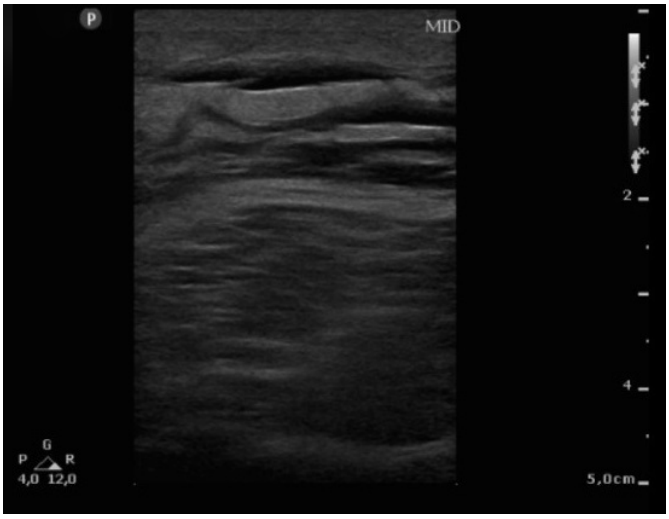

Figure 1. Ultrasonography of the right lower limb on the 4th day of hospitalization showing thickened skin and subcutaneous adipose tissue, with a heterogeneous appearance and with thin layers of liquid between them.

Figure 2. Computed tomography of the lower limbs on the 4th day of hospitalization showing diffuse skin and subcutaneous edema without loss of continuity.

In the sixth week, with control of the infectious condition, a suture was performed with inversion of the edges, elastic suture on viable tissues in the thigh (Figure 4), and debridement on the other injured tissues (Figures 5 and 6), with the removal of the elastic suture after 7 days. Hemoglobin levels were maintained above 10 g/dl throughout treatment, with transfusion support of 9 packed red blood cells in total.

With success in reducing the wound's bloody bed, a dressing change was scheduled every 3 days with silver sulfadiazine and new debridement in the surgical center weekly. In the ninth week, a partial skin graft was performed on the ankle and dorsum

Figure 3. Debridement of the lesion in the operating room.

Figure 4. Postoperative appearance of elastic suture.

of the right foot with the donor area on the left thigh, followed by a partial skin graft on the right thigh after another two weeks due to the lack of complete closure of the lesion after the elastic suture due to size of the lesion (Figure 7).

During hospitalization, motor physiotherapy was performed on alternate days to maintain the functionality of the lower limb. The patient presented complete resolution of the condition after 3 months, with continued hospitalization for another month to undergo physiotherapy for social reasons, being discharged after 4 months of hospitalization, walking without assistance, with the graft integrated without dehiscence (Figure 8).

DISCUSSION

Treatment of LML is highly individualized, taking into account the extent of the lesion, the

Figure 5. Injury to the right leg.

Figure 6. Injury to the right thigh.

Figure 7. Partial skin graft on the right thigh.

Figure 8. 30 days postoperative of partial skin grafting on the right thigh and right leg.

presence of associated complications, and the patient's response to initial therapy. Therapeutic options can range from conservative approaches to more invasive interventions, depending on the severity and evolution of the injury.

In less severe injuries, drainage of the accumulated fluid is often performed through image-guided percutaneous aspiration or the use of closed drains, aiming to remove the fluid and establish an environment conducive to healing. Surgical debridement is a more invasive therapeutic option that may be indicated in cases of extensive necrotic tissue, the presence of abscesses, or persistent infection. Complete removal of devitalized and contaminated tissue is essential to promote adequate healing and avoid subsequent infectious complications[5,6].

The case reported illustrates this therapeutic approach well. The patient suffered the trauma, presenting only abrasions on the right knee initially, but developed local edema, phlogistic signs, and fever after three days. Ultrasonography and computed tomography confirmed the diagnosis of LML. The patient progressed to sepsis, requiring targeted antibiotic therapy and multiple surgical debridements to remove the necrotic tissue. During hospitalization, the complexity of management included the use of vacuum dressings, changing antibiotics, and repeated debridement, demonstrating the importance of an aggressive, individualized, and multimodal approach to complicated cases.

After surgical debridement, the use of vacuum dressings plays a key role in stabilizing the lesion and progression to granulation tissue. These dressings help reduce seroma formation, promote tissue adhesion, minimize the risk of secondary infection, and promote healing by secondary intention[7].

In more serious situations, where there is significant involvement of the underlying muscle tissue, surgery may be necessary to remove the necrotic tissue and repair the muscle injuries[8]. In these cases, tissue reconstruction can be performed using skin grafts, muscle flaps, or primary closure techniques, depending on the extent of the injury and the patient's characteristics[9,10]. These procedures aim to restore the structural and functional integrity of the affected region, allowing adequate recovery of muscle function.

Our patient's treatment included several of these strategies, culminating in skin grafts and elastic suturing for functional recovery. Physiotherapy was essential for rehabilitation, allowing the patient to

regain full functionality of the affected limb. The recovery process was prolonged, with hospital discharge after four months of hospitalization, highlighting the need for multidisciplinary and prolonged management to optimize clinical results.

CONCLUSION

The case presented highlights the crucial importance of rapid diagnosis and early surgical management of Morel-Lavallée lesions. Promptness in identifying this type of injury is essential to avoid serious complications and promote a more effective recovery.

Surgical intervention with debridement of devitalized tissues in a surgical environment emerges as a key element to limit the progression of the lesion, prevent secondary infections, and promote healthy healing, with subsequent application of partial skin grafts as necessary.

Furthermore, the multidisciplinary approach is a vital aspect of this process, evidenced by close collaboration with a motor physiotherapy team. The integration of rehabilitation strategies from the initial phases of treatment is essential to optimize motor function and accelerate the patient's recovery.

COLLABORATIONS

BLZ Analysis and/or data interpretation, Conception and design study, Investigation, Writing - Original Draft Preparation.

GMM Project Administration.

PC Supervision.

THC Realization of operations and/or trials.

VAA Data Curation.

LGNM Realization of operations and/or trials.

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