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Morel-Lavallée lesion as an unusual cause of hemorrhagic shock: Case report and review of literature

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ABSTRACT

INTRODUCTION: Morel-Lavallée syndrome (MLS) is considered as a rare entity and hemorrhagic shock as a complication is uncommon.

PRESENTATION OF CASE: We report the case of a 56-year-old man who presented to the emergency department after a road traffic accident. Initially, the patient was hemodynamically unstable (heart rate 160 beats/min and blood pressure 65/30). Physical examination revealed multiple lacerations on his back and a gradually expanding large subcutaneous hematoma on the left flank extending to the hip and left leg. Fluid resuscitation was rapidly initiated. After stabilizing his hemodynamic status, a full-body computed tomography was performed revealing, apart from a small unilateral pneumothorax and a stable pelvis fracture, an extensive Morel-Lavallée lesion in the lumbar region extending to the hip and both legs. The patient was then transferred to a surgical intensive care unit for further resuscitation and surgical drainage of the collection followed by continuous suction was performed. Even though rare, Hemorrhagic shock is one of the threatening complications of Morel-Lavallée lesions and should be kept in mind by every traumatologist and emergency doctor.

CONCLUSION: We report a case about a rare complication of MLS which is hemorrhagic shock in order to highlight the importance of making the diagnosis, which can be unrecognized, and initiate an adequate treatment on time.

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1. Introduction

Morel Lavallée lesion is a rare entity first described by the French physician Victor Auguste Francois Morel-Lavallée in 1853 [1]. It is the result of high-energy tangential, shearing forces separating the skin and subcutaneous tissues from the solid underlying fascia [1], thus creating a potential space filled with hemolymph and necrotic fat, resulting from the disruption of perforating blood and lymphatic vessels. This condition commonly occurs over the greater trochanter and the involvement of the lumbar region is rarely reported in the literature. In most of the cases, the collection is small in size, exceptionally the area involved could be very large, and if not early diagnosed and managed it can lead to a hypovolemic shock. We herein report the fourth case of Morel-Lavallée lesion causing hemorrhagic shock.

Written informed consent was obtained from the patient for publication of this case report and accompanying images. This manuscript adheres to the SCARE guidelines.

2. Case presentation

A 56-year-old man from a medium socio-economic level, with a history of hypertension, without any personal or familiar surgical history, arrived at the emergency department after a road traffic accident (He was struck and dragged by a motor vehicle). At the time of admission, he was tachycardic (heart rate 160 beats/min) and presented with severe hypotension (blood pressure was 65/30 mmHg). Besides, he was tachypneic (40 breaths/min) with an oxygen saturation of 99 % on 15-liter non-rebreathing mask. The temperature was 36 °C and he presented diaphoresis. His Glasgow Coma scale was 13 with symmetric and reactive pupils.

On physical examination, lung auscultation showed conserved and symmetric vesicular murmur. The abdomen was bloated with general tenderness and the pelvis was clinically stable. He did not present any localized neurological deficit with normal sensory testing and symmetrical reflexes. The rest of the examination revealed multiple lacerations on his back and a large subcutaneous hematoma on the left flank extending to the hip and left leg. Fluid resuscitation has been rapidly initiated with 1 L of colloid solution, 1.5 L of saline and two units of packed red blood cells were administered. Norepinephrine was used to optimize the mean blood

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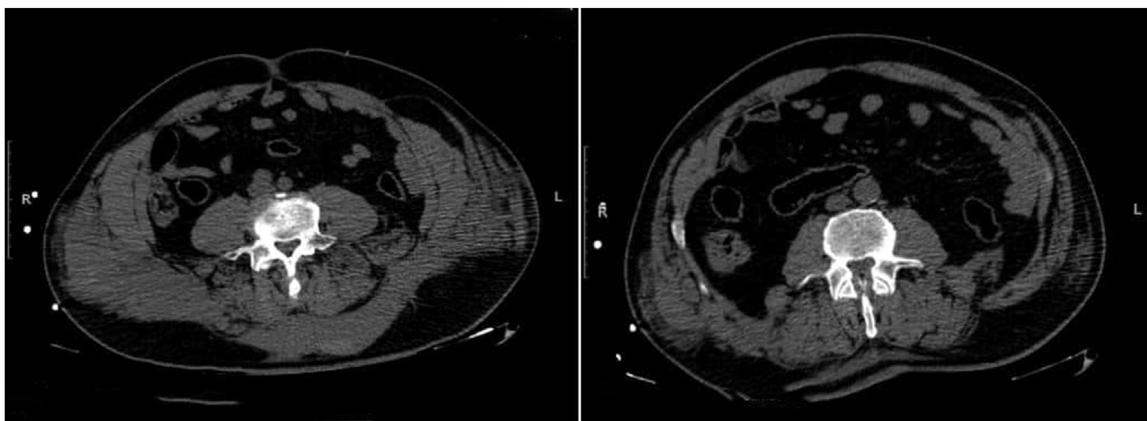


Fig. 1. Computed tomography scan of the abdomen on arrival at the emergency department showing the early signs of a Morel-Lavallée lesion in the lumbar region.

pressure. Acid tranexamic was administrated (1 g on 20 min and 1 g six hours).

A focused assessment sonography for trauma showed small intraperitoneal effusion which could not explain the hemodynamic instability. Transcranial doppler ultrasonography was normal. The initial serum lactate was 9.6 mmol/L and hemoglobin level was 10.5 g/dl (at the time of admission). Arterial acid-base balance at that time showed pH 7.25, partial pressure of oxygen 106 mmHg, partial pressure of carbon dioxide 32 mmHg, bicarbonates 20 mmol/L, base excess -11.5 and oxygen saturation 99 %. Following the resuscitation effort, his blood pressure was stable so additional exploration was done to find an explanation for the ongoing shock. Computed tomography (CT) included the head, chest, abdomen and pelvis was done. It revealed small unilateral pneumothorax without rib fracture, small intraperitoneal fluid effusion, stable pelvis fracture without contrast extravasation and an extensive Morel-Lavallée lesion in the lumbar region extending to the hip and both legs (Fig. 1).

So, the patient was transferred to a surgical intensive care unit for further resuscitation, where his BP was stable using norepinephrine (0.5 $\mu\text{g}/\text{kg}/\text{min}$) but he remained tachycardic. His rechecked hemoglobin level was 5.9 g/dl after three hours from his admission. He was transfused again with four units of packed red blood cells, eight fresh frozen plasma and 2 g of fibrinogen. Surgical drainage was performed on the same day by an experienced orthopedic surgeon (1.5 L of hematoma was drained from his left thigh and 1 L from his right thigh).

During the following 48 h, he received two units of packed red blood cells in addition to four eight fresh frozen plasma. His hemodynamic status normalized and norepinephrine was discontinued. He was discharged after to orthopedic department after one week. After that, the patient was discharged to his home after two weeks of hospitalization. He was followed up during one month by once-a-week consultation. He totally recovered and returned to his normal activity.

3. Discussion

Morel-Lavallée syndrome (MLS) is considered as a rare entity in which the subcutaneous tissue is torn away creating a cavity filled with hematoma and liquefied fat, due to post-traumatic soft tissue injury [1]. Little is known about its epidemiology and most reported cases involved lesion found at the greater trochanter, the buttock, the proximal femur and the knee. However, MLS of the lumbar region has been very rarely reported [2]. So, we report a case of an unusual presentation of MLS complicated by hemorrhagic shock.

Concerning the diagnosis, MLS is often misdiagnosed especially when it occurs in the lumbar region due to the lack of early cutaneous signs [3]. Hudson et al. reported that more than one-third of MLS lesion was initially missed [4]. Unless a delayed diagnosis may cause devastating consequences like a hemorrhagic shock which is a rare complication and only four cases have been described in the literature. Classen et al. [5] reported a case of MLS situated in the lumbar region treated with conservative treatment based on compression using the patient's own body weight. Hefny et al. [6] reported a case of MLS in the flank treated by percutaneous suction drainage. Mao et al. [7] reported a lesion located at the upper thigh treated by surgical drainage. Yumoto et al. [8] reported a lesion of the lower back. Therefore, several diagnostic imaging modalities including CT and magnetic resonance can help and are easier to perform in acute situations [9]. Furthermore, ultrasound can be a useful alternative for diagnosis, follow-up and monitoring [10].

Morel-Lavallée is a closed lesion but other potential complications much common than hemorrhagic shock can occur like soft tissue infection or wound dehiscence. So, an adequate treatment should be done on time. However, there is no recommendation and several methods were described in the literature. Lin et al. [11] used ultrasound-guided percutaneous drainage with compressive bondage for the management of the lumbar lesion. Some authors suggest conservative treatment based on compressive bandaging and strict surveillance [11]. While others have described many invasive methods like surgical debridement, surgical drainage or injection of sclerosing agents [4,7,12]. In our patient, surgical drainage was adequate in controlling the expansion of the hematoma. This case is reported in line with the SCARE Guideline [13].

4. Conclusion

We report a case about an unusual and rare complication of Morel-Lavallée syndrome which is hemorrhagic shock in order to highlight the importance of making the diagnosis, which can be unrecognized, and initiate an adequate treatment on time. In addition to that, in case of subcutaneous hemorrhage, every traumatologist or emergency doctor should not underestimate the extent of this type of lesion.

Declaration of Competing Interest

The authors report no declarations of interest.

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Ethical approval

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Consent

Written consent was signed.

Author's contribution

- o Mohamed Aziz Daghmouri: This author helped in making the diagnostic, taking care of the patient and writing the first draft.
- o Imen Ben Ismail: This author helped in making the diagnostic, taking care of the patient and writing the first draft.
- o Maroua Ouesleti: This author helped in making the diagnostic and taking care of the patient.
- o Mohamed Amin Tarhouni: This author helped in making the diagnostic and taking care of the patient.
- o Olfa Faten: This author helped in making the diagnostic and taking care of the patient.
- o Sabeur Rebai: This author helped in taking care of the patient.
- o Ayoub Zoghlemi: This author helped in the revision of the manuscript.
- o Lotfi Rebai: This author helped in the revision of the manuscript.

Registration of research studies

NA.

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