

Milker's nodules: classic histological findings*

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Abstract: Milker's nodule is an occupational dermatovirose caused by Parapoxvirus, which is self-limited and, due to the lack of information of health professionals, may lead to underdiagnosis. We present two cases with exuberant manifestations and classic histopathologic findings. Case 1: Male, 19 years of age, milker, presented nodules and blisters on his palm for 15 days. Case 2: Male, 33 years of age, administrative assistant, presented erythematous nodules on his palms with lymphangitis for 5 days. He had milked a cow one week before the onset of the lesions. In both cases, the histopathology was representative and coincident with the clinical hypothesis. The lesions have presented complete involution. Milker's nodule diagnosis is based on clinical presentation, epidemiology, and histopathology. The knowledge of this disease is essential for its correct diagnosis, as well as to guide the implementation of public health measures and the appropriate treatment of sick cattle.

Keywords: Pseudocowpox virus; Parapoxvirus; Poxviridae; Poxviridae Infections

INTRODUCTION

Milker's nodules, also known as pseudovariola, is a viral skin disease resulting from a skin infection caused by bovine origin parapoxvirus.¹ In most cases, the infection has an occupational nature and occurs mostly during the milking activity.² Its course is self-limited, contributing to the undernotification of the disease and the failure to seek medical care.²

This study, confirmed by histopathological tests, reports two cases of this dermatosis, which is, many times, uncommon in daily practice.

CASE REPORT

Case 1: A 19-year-old male patient, without comorbidities, a cow milker, over a 15-day period, exhibited papules on his palms, which developed into painful blisters. The patient denied having systemic symptoms. He stated that, at his workplace, some cows had lesions on their udders. He denied having had contact with caprines or ovines. The exam revealed tense blisters with a discretely violaceous center, papules, and nodules (some of which were target-shaped) on his palms and on the back of the second finger on his right hand, varying between 0.2 and 2.5 cm in diameter, totaling nine lesions (Figure 1). No perilesional erythema, adenomegaly, or local heat was observed. In 25 days, the lesions diminished spontaneously, without scarring.

Case 2: A 33-year-old patient, administrative assistant, over a 5-day period, presented progressively growing painful blisters on his palms. A week prior to the start of the lesions, the patient had milked cows that had lesions on their udders. The exam revealed erythematous-violaceous blisters on his right palm, with painful ascending lymphangite associated with axillary lymphadenomegaly (Figure 2). The patient denied having any fever or other symptoms. The treatment selected for the secondary infection was amoxicillin at 500 mg associated with clavulanic acid at 62.5 mg every 8 hours, for seven days. In 20 days, the lesions fully disappeared, without scarring (Figure 2).

Both patients underwent a punch biopsy (4mm) of the most recent lesion. The tests revealed epidermal necrosis, spongiosis, the presence of inflammatory cells, and intracytoplasmic eosinophilic inclusions, confirming the clinical hypothesis of milker's nodule (Figures 3 and 4).

Both patients were advised as to the nature of the infection, and were instructed to wear gloves and to follow proper hygiene measures for the milking activity. The affected animals were assessed by qualified professionals. It was possible to perform the photographic record of the lesions in the animal involved in case 2 (Figure 5).

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FIGURE 1 - Case 1: - Multiple bullous violaceous lesions on the palms



FIGURE 3: Cow udder affected by bullous and nodular violaceous lesions



FIGURE 2 - Case 2: A. Target-shaped blister with ascending lymphangitis; B. lesion detail with residual aspect after biopsy

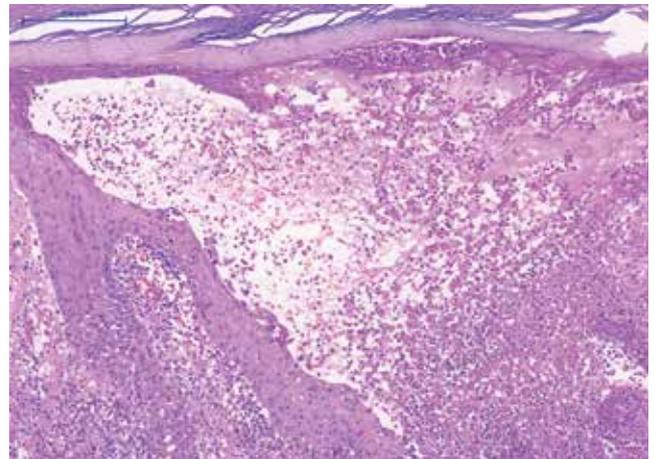


FIGURE 4: Histopathological exam revealing multilocular vesicle on the epidermis and dermal infiltrate (Hematoxylin & eosin, X10)

DISCUSSION

The Paravaccinia virus – a DNA virus first isolated in 1963 by Banfield – is the etiological agent in milker's nodule.³ The virus infects the udder, trunk, and limbs of bovine cattle, and is also present in the animals' saliva and nasal secretion.² Human transmission takes place by direct inoculation by means of lesion-in-continuity

during the handling of the contaminated animal. However, infections can also occur by means of fomites, such as pocket knives, barbed wire, or contaminated equipment.⁴

The lesions occur mostly on the hands and fingers. After a five to fifteen-day period, one to four lesions appear, which will go through six evolution stages.^{5,6} The lesions appear as erythematous macules, which become target-shaped with central ulceration and then exudative nodules. The fourth phase is the formation of dry regenerative lesions with dark spots on the surface. These lesions became papillomatous lesions and, finally, fully receded, leaving a dry crust covering the previous lesion sites, with no scars.⁶⁻⁸ The lesions are self-limited and usually disappear spontaneously within four to six weeks. However, in immunosuppressed patients, they may last for months and tend to recur.⁸ Some of the patients exhibit a secondary infection of the lesions, lymphangitis, or erythema multiforme.^{2,9}

The histopathological exam reveals that the epidermis is hyperkeratotic, with mild to moderate acanthosis and papillomatosis, especially in the fifth and sixth phases.¹ Ulceration may also

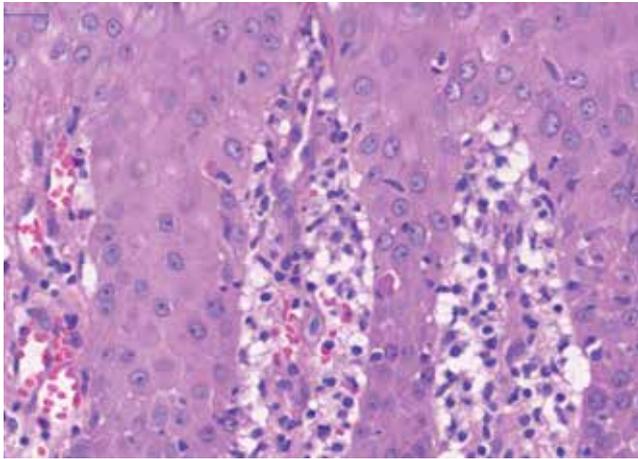


FIGURE 5: Presence of spongiosis, eosinophilic cytoplasmic and nuclear inclusions on the epidermis (Hematoxylin & eosin, X50)

occur. Nuclear vacuolization and cytoplasmic vacuolization may be observed, and the latter may be so intense that it leads to the degeneration of the epidermis and vesicle formation (especially during the third phase).¹⁰ Occasionally, spongiosis is detected, which contributes to the occurrence of vesicular lesions. On the dermis, the inflammatory infiltrate is dense and predominantly lymphohistiocytic (**Figure 3**). The viral cytopathic effect may be moderate to extreme

and is present in both recent and late lesions. Cytoplasmic inclusion bodies – which are eosinophilic homogeneous bodies, often with a pale halo around them – occur mainly on the upper epidermis, especially during the first and second stages (**Figure 4**).¹¹ There is often capillary proliferation and vasodilation with the formation of large capillary pools, in both recent and late lesions.¹¹ The assurance diagnosis is obtained by viral isolation, beginning with the tissue culture or by electronic microscopy⁽⁴⁾, in which the virus is presented in a cylindrical shape.⁹

The differential diagnosis regarding Orf, which is also a skin viral disease caused by parapoxvirus of the Poxviridae family, is mostly performed by the history of contact with ovine or caprine herds (rather than with bovines), given that they are clinically and histopathologically undistinguished.¹¹ Other differential diagnoses include anthrax, atypical micobacteriosis, sporotrichosis, tularemia, loxoscelism, piogenic granuloma, and cowpox.⁶

This study reports on two cases of milker's nodules with classic and exuberant lesions, whose histopathological tests were quite characteristic. Doctors, especially dermatologists, should understand this viral disease, as well as understand how to handle it appropriately. They should also know how to instruct workers as to the proper use of personal protection equipment and on-hand hygiene, as well as recommend treatment of animals by qualified professionals. □

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