A Case of Orf Identified by Transmission Electron Microscopy

Fen Peng[1], Zhou Chen[1], Shu-Ying Zheng[2], Hou-Min Li[1], Juan Du[1], Jian-Zhong Zhang[1]

[1]Department of Dermatology, Peking University People's Hospital, Beijing 100044, China
[2]Department of Electron Microscope, Peking University People's Hospital, Beijing 100044, China

To the Editor: A 20-year-old woman complained of two painful pruritic lesions on her left index finger. She had been bitten by a lamb on her index finger a month earlier; the lamb died 2 days later. Five days after having been bitten, she noticed two papules on her left index finger that enlarged gradually. Physical examination revealed two indurated nodules 8-mm and 10-mm in diameter, each with central umbilication and surrounded by a reddish halo [Figure 1a]. The patient had no fever, respiratory symptoms, or lymphadenopathy. The informed consent was written.

Histopathology of the lesions showed epidermal necrosis and a dermal infiltration of neutrophils, eosinophils, and lymphocyte. The transmission electron microscopy of a crust showed multiple typical orf viral particles, which were enveloped with a brick-shaped morphology and consisted of a central DNA-containing core surrounded by a bilayered capsid [Figure 1c-g]. Orf was diagnosed; the patient was treated with oral moxifloxacin and topical mupirocin. Two days later, she found multiple small papules clustered around each nodule. The palm had severe pruritus [Figure 1b]. She was given chlorphenamine maleate 1 mg at bedtime. The lesions slowly resolved [Figure 1h].

Orf virus has a worldwide distribution among sheep and goats. In humans, orf is typically a mild, self-limiting infection characterized by one or multiple nodules on the hands and fingers, as well as areas remote from the orf infection, including the feet, legs, neck, and face. Infection occurs through inoculation of broken or abraded skin from infectious animals or contaminated fomites. Three to seven days after inoculation, the orf appears as papules that slowly enlarge to a weeping targetoid nodules that ulcerate and form a dry crust. They resolve within 4–8 weeks. No specific treatment is warranted. No person-to-person spread occurs.[1]

Systemic symptoms and complications are common. Fever, erythema multiforme, and bullous pemphigoid-like lesions may occur. Less commonly, lymphangitis, lymphadenitis, ocular damage, and erysipelas-like plaques may be evident.[2]

Diagnosis of orf is based on clinical features and a history of contact with animals or contaminated material. Electron microscopy is an accurate laboratory approach for confirmation of the diagnosis. In this patient, there were typical nodules and a history of being bitten by a lamb. The differential diagnoses include pyogenic granuloma, cutaneous anthracosis, and orthopox virus infection.[3] To the best of our knowledge, this is the first reported case in China confirmed by electron microscopy. The electron microscopy has been used for the diagnosis of orf.[3-5] It shows ovoid particles with a crisscross appearance with viral particles predominantly in ballooned keratinocytes within superficial epidermal keratinocytes. The central DNA-containing core was surrounded by a bilayered capsid.[4] Others have described the viral particle having a brick-shaped morphology

Figure 1: Clinical picture and electron microscopy of the orf lesions: Note two nodules 8 mm and 10 mm in diameter on the left index finger with an umbilicated center, and surrounded by a reddish halo (a), multiple papules on the left index finger around the original nodules and on the palm (b), the transmission electron microscopy showed multiple typical orf viral particles (c), with multiple shaped morphology and consisting of a central DNA-containing core and surrounded by a bilayered capsid (d–g), the lesions resolve one month later (h).

Address for correspondence: Prof. Jian-Zhong Zhang, Department of Dermatology, Peking University People's Hospital, Beijing 100044, China
E-Mail: rmzjz@126.com

Access this article online

Quick Response Code:

Website: www.cmj.org

DOI: 10.4103/0366-6999.172606

Received: 13-07-2015 **Edited by:** Li-Min Chen
How to cite this article: Peng F, Chen Z, Zheng SY, Li HM, Du J, Zhang JZ. A Case of Orf Identified by Transmission Electron Microscopy. Chin Med J 2016;129:108-9.

and irregular tubules at its surface together with the characteristic crisscross spiral pattern.[5] The nodules usually resolve spontaneously. Treatment for secondary infection may facilitate healing.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Joseph RH, Haddad FA, Matthews AL, Maroufi A, Monroe B, Reynolds M. Erythema multiforme after orf virus infection: A report of two cases and literature review. Epidemiol Infect 2015;143:385-90. doi: 10.1017/S0950268814000879.
2. Al-Salam S, Nowotny N, Sohail MR, Kolodziejek J, Berger TG. Ecthyma contagiosum (orf) – Report of a human case from the United Arab Emirates and review of the literature. J Cutan Pathol 2008;35:603-7. doi: 10.1111/j.1600-0560.2007.00857.x.
3. Bassioukas K, Orfanidou A, Stergiopoulou CH, Hatzis J. Orf. Clinical and epidemiological study. Australas J Dermatol 1993;34:119-23. doi: 10.1111/j.1440-0960.1993.tb00880.x
4. Nougairede A, Fossati C, Salez N, Cohen-Bacrie S, Ninove L, Michel F, *et al.* Sheep-to-human transmission of orf virus during Eid al-Adha religious practices, France. Emerg Infect Dis 2013;19:102-5. doi: 10.3201/eid1901.120421.
5. de Sant'Ana FJ, Leal FA, Rabelo RE, Vulcani VA, Moreira CA Jr, Cargnelutti JF, *et al.* Coinfection by *Vaccinia virus* and an orf virus-like parapoxvirus in an outbreak of vesicular disease in dairy cows in Midwestern Brazil. J Vet Diagn Invest 2013;25:267-72. doi: 10.1177/1040638713475799.