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AN OUTBREAK OF CONTAGIOUS ECTHYMA IN ADULT SHEEP

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SUMMARY

This report documents an outbreak of contagious ecthyma in adult Iraqi sheep with high morbidity and low mortality. The clinioal findigs of the disease were: severe involvement of the buccal, gingival, labial and lingual mucosae. The causative agent was isolated in secondary lamb testis cells and identified by using a reference anti-contagious ecthyma antiserum.

INTRODUCTION

Contagious ecthyma is a well recognized viral disease of sheep and goats (1). The disease is caused by parapox virus (family poxviridae) and it produces a painful proliferative type dermatitis of the lips. The first study of the disease in Iraq (2) was on lambs, 2-3 months old, where virus isolation and identification was achieved. This study reports an outbreak of contagious ecthyma in adult Iraqi sheep (Awassi breed) recently encountered in Baghdad , where clinical, virological and pathological studies were conducted.

MATERIALS AND METHODS

An outbreak of the disease in sheep was investigated. It appeared in a private farm with 400 adult sheep. Complete clinical examination was done and four cases were subjected to thorough post-mortem examination.

Specimens from lesions of the mouth cavity (scabs, pustules, proliferative type lesion of the lips and tongue) were collected, and parts of them were fixed in 10% neutral buffered formalin for histopathological examination.

Parts of the mouth lesions were homogenized separately using sterile sand in phosphate buffer saline (PBS PH 7.2), then centrifuged at 4 °C for 30 minutes at 2000 rpm, the supernatent fluid was treated with antibiotics at a concentration of 500 IU penicillin and 500 µg streptomycin per milliliter. This fluid was used for virus isolation in secondary lamb testis cells and inoculation of animals for the experimental reproduction of the disease. Primary lamb testis cell cultures were prepared according to Plowright et al (3) and grown in 75 cm^2 plastic flasks using medium 144 supplemented with 10% fetal calf serum and 10% tryptose phosphate broth. For virological isolation, testis cell cultures were prepared from the primary cell growth and were inoculated with 0.5 ml of homogenized (lesion) supernatent fluid. The isolated virus was identified by specific standard hyperimmune serum against contagious ecthyma virus (Halila strain) using microtiter virus neutralization test.

Experimental Animals: Two, six-months old lambs were inoculated by scarification of the lips, tongue and commissures with the homogenized lesion supernatent fluid. Animals were subjected for daily clinical examination.

RESULTS

CLINICAL FINDINGS:

This study was conducted on a herd of 400 adult sheep (Awassi breed) with a morbidity rate of 90% and a

mortality rate of 3%. The following clinical signs were observed on the herd : dullness, depression, anorexia, profuse salivation, lacrimation accompanied by mucopurulent nasal discharge, congestion of the nasal and buccal mucosae, Also seen are eruptions on the oral cavity (tongue, lips, and gums) and 30% of the herd showed marked proliferative type dermatitis (Fig. 1) at the commissures. There were crusts on the muzzles and marked edema of the lips. The pulse and respiration were accelerated. Auscultation of the lungs revealed muffled sounds and dry rales . Lameness was an obvious sign in 10% of the animals of the herd and clinical examination of the lame animals did not reveal any deformities or abnormalities in the hoof or around it.

Fig.1: Adult sheep with proliferative lesion of the lips especially at the commissures.

GROSS PATHOLOGY:

There was pustular type dermatitis of the lips,together with proliferative type lesion seen especially on the commissures but also on the gums and tongue. The size of the proliferative lesion was up to 1.5 cm and the vesicles and papules were not frequent i.e. advanced sort of lesion. There were focal areas of consolidation in the lung.

HISTOPATHOLOGY:-

Mucocutaneous junction of the lip has superficial ulceration of the epidermis and mucosa with lots of infiltrating intact and degenerate polymorphonuclears (PMM's) mixed with necrotic debris (i.e. pustule formation) and some bacterial colonies appearing as bluish granules (Fig.2). The adjacent epidermis, the one

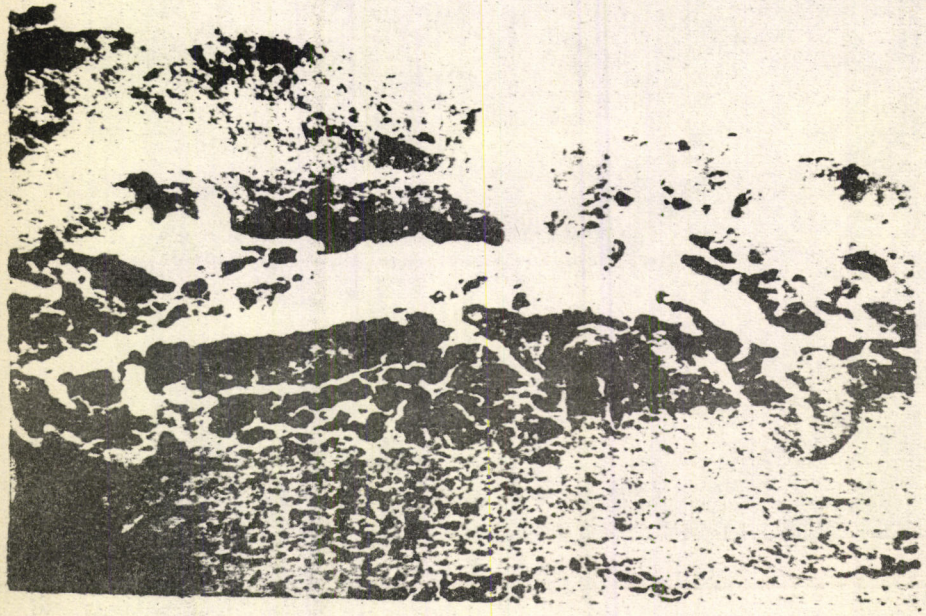

Fig.2: Mucocutaneous junction of a sheep with pustule formation. There is ulceration and accumulation of necrotic debris and PMN's aggregations. H&E x40.

nearby the pustular lesion, had ballooning degeneration of it's epithelium with rupture of few cells giving a microvesicle formation. There is occasional pyknosis of the epidermal epithelium, it's infiltration with few aggregates of PMN's , together with proliferation of the epithelium (acanthosis) but no inclusion bodies could be seen. The underneath dermis and subcutis had congested blood vessels (capillaries) and cellular infiltrations predominantly PMN's mainly neutrophils, mixed with some macrophages but with occasional eosinophils are seen (Fig.3).

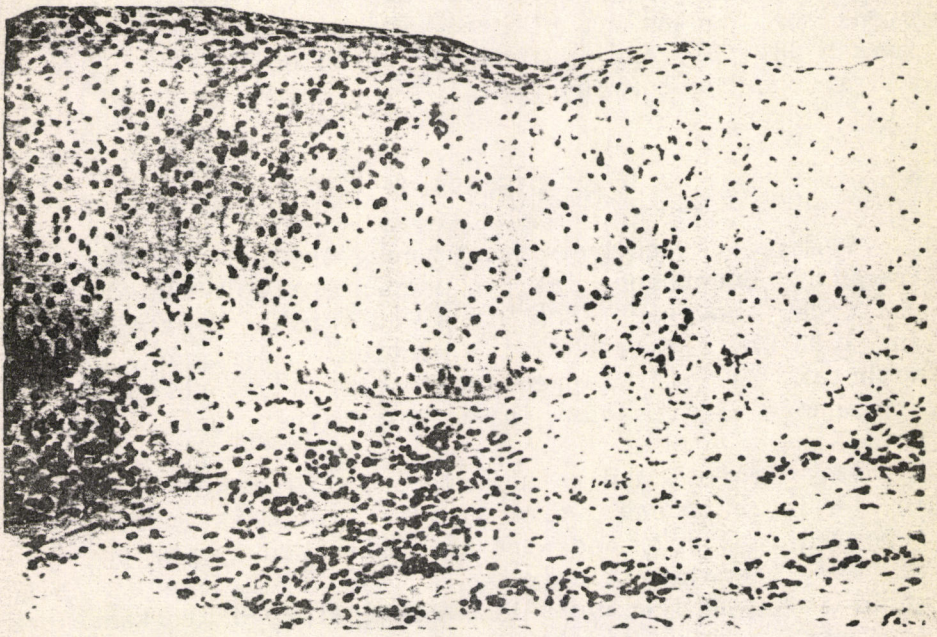

Fig.3: Skin with ballooning degeneration of the epidermal epithelium and mixed celluar infiltration of the upper dermis. Also notice minor aggregate of PMN's in the epidermis. H&E x100.

VIRUS ISOLATION AND IDENTIFICATION:-

Inoculation of the infectious material into secondary lamb testis cell cultures gave a typical cytopathic

effect (CPE), the first of which appeared 48 hours post inoculation (PI) and was in the form of circular foci of cellular swelling. Rounded and degenerate cells were detached 72 hours (PI) , and this was followed by complete sloughing of cells from the surface monolayer. Second passage of the harvested fluid into new secondary lamb testis cells revealed CPE which was detectable 24 hours (PI). The isolated virus was completely neutralized by specific contagious ecthyma virus (Hilla strain) hyperimmune serum with a titer of 32.

Experimental inoculation of the lambs with supernatent fluid of the homogenized lesions gave the main clinical signs of contagious ecthyma. The disease started on the fourth day (PI) and lesions were seen on the lips, tongue and around the commissures.

DISCUSSION

Contagious ecthyma among young lambs is a disease of frequent occurrence as we encounter it in our clinical practice, however, the virus was first isolated in Iraq in 1983 by Al- nada (2). A particular interest of this outbreak is it's appearance among adult sheep and the appearance of lesions in unusual sites such as lingual mucosa.

The clinical and pathological findings we encountered in this outbreak were similar to those previously reported (4,5,6,7) and were characterized by the presence of proliferative lasions in the oral cavity, high morbidity and low mortality, respiratory disturbance and lameness , all of which are highly suggestive for the disease. Our final diagnosis was based on the characteristic lesions, and the isolation and identification of the virus by CPE and neutraliztion.

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الخلاصة

يصف هذا التقرير وباء لمرض الحميقاء المعدية في الاغنام العراقية البالغة، كان مصحوبا بنسبة اصابة عالية ونسبة وفيات منخفضة، اشتملت العلامات السريرية على اصابة شديدة للمخاطية الشدقية واللثوية والشفوية واللسان. عزل العامل المسبب في خلايا خمية الحملان الثانوية وشخص المرض باستعمال مصل مضاد لحمة الحميقاء المعدية.