Diagnosis of goat pox with electron microscopy and its management

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Abstract
Sheep pox and goat pox are important OIE notifiable and transboundary diseases characterised by typical papules, pustules (rarely vesicles) on exposed body surfaces along with other associated signs. In present study a goat was presented to TVCC, C.V.Sc., Hyderabad with papules, pustules all over the body particularly on face, ears and tongue with elevated body temperature, generalized weakness and off feed. The scabs were collected for Transmission electron microscopy, which revealed characteristic virions suggesting capripox virus. Cultural examination and Antibiotic Sensitivity Test revealed Staphylococcus spp and sensitivity for enrofloxacin. Therapy with enrofloxacin @5mg/kg body weight for 7 days, meloxicam @0.2mg /kg body weight for 3 days followed by chloraphenaramine malleate 0.5 ml for another 3 days with topical boroglycerine paste on pock lesions for a couple of weeks revealed noticeable improvement in lesions and other signs in 3-10 days.

Keywords: pox, papules, pustules, office international des epizooties

Introduction
Sheep and goats occupy a premier place in the livestock industry and contribute significantly to the world economy. Their populations are threatened by a number of health hazards, among the most notable of which are goat pox and sheep pox. These diseases inflict substantial losses in terms of reduced productivity and lower quality of wool and leather (Hota et al. 2018) [2]. Sheeppox and goatpox (OIE) notifiable and transboundary (OIE, 2008). Goat pox and sheep pox are diseases of goats and sheep characterized by pyrexia, generalized skin and internal pox lesions, and lymphadenopathy (Arnaud Greta et al. 1992 and Sohair et al. 2010). The dis-eases are caused by goat pox virus (GPV) and sheep pox virus (SPV), which are enveloped, double-strandedDNA viruses, classified in the genus Capripox virus of the family Poxviridae (Bhanuprakash et al. 2008). Economically important high morbidity, mortality and export-import restriction (Babiuk et al., 2008).

Case History
A case (dog) has been presented to people for animal zuamarath bazar (PFA), Case No: 1274, Species: Caprine, Breed: Nondiscript, Age: 8 months, Sex: Male, Weight: 6 kg.

Lesions
Lesions are characterized by papules, pustules all over the body particularly on lips (Fig-1), tongue (Fig-2), upper eyelid (Fig-3), Ear (Fig-4), base of the tail (Fig-5) and face with elevated body temperature, generalized weakness and off feed.

Diagnosis
The samples were collected (Fig-6) from scabs using B.P blade and were transferred into glutaraldehyde contain test tube.

Fixation and preparation for Electron Microscopy (Higashi et al. 1960) [3]

Fixation: 2.5% gluteraldehyde in 0.1 M phosphate buffer (pH 7.2) for 24 h at 4°C & samples were washed with PBS for 4times each 45 minutes.

Post fixation: 1% aq. Osmium tetroxide for 2 h, later washed with D.D.W for 6 times each 45 minutes.
Dehydration: series of graded alcohols, 45 minutes each, infiltrated and embedded in spur resin (Spurr*, 1969).

Incubation: 80°C for 72 h for complete polymerization.

Sectioning: Ultra microtome (Leica Ultra cut UCT-GA- D/E-1/00) - mounted on copper grids.

Staining & counter staining: aq. Urenyl Acetate (UA) and Reynolds Lead Citrate (LC) respectively. Viewed under TEM (Model: Hitachi, H-7500 from JAPAN) at required magnifications at RUSKA Labs, C.V.Sc, Spvntsvufs, Rajendranagar, Hyderabad, India.

Capripox Virions Identified
Intracytoplasmic, Size 271.2 x 252nm (avg. of 48 virions) Large brick shaped –oval with round ends.

Cultural Examination
Cultural examination and Antibiotic Sensitivity Test (Patel et al. 2006) [4] revealed Staphylococcus spp and sensitivity for enrofloxacin (Fig-7).

Clinical Management
1. Potassium permanganate 1:10000
2. Boroglycerine paste topical application
3. Enrofloxacin 0.5mg/kg for 5 days
4. Meloxicam 0.2 mg/kg for 3 days
5. Chlorphenaramine malleate 0.5 ml intramuscular for 3 days
After completed the treatment that goat (Fig-8) was recovered and healthy.

Figures

Pock Lesions on Different Body Parts

The affected histiocytes show a degenerative change with loss of nuclear chromatin.

These cells are the 'celles claveulse' that are pathognomonic for SGPX (Borrel, 1903a; Plowright et al., 1959; Murray et al., 1973).
Fig 4: Pock Lesions on Ear

Fig 5: Pock Lesions on base of the tail

Fig 6: Collection of samples

Fig 7: Zone of inhibition – high for enrofloxacin

Fig 8: After treatment recovered goat

References