Summary

The current investigation studied the last outbreak of lumpy skin disease in some governorates through out Egypt. This study collect and evaluate the epizootiological data of the last outbreak in Beni-Suef and Al-Fayium governorates from March to September 2006.

5500 cattle of all ages, breed and sexes were examined clinically. 4675 cattle were found clinically diseased with 85% morbidity rate. 1870 diseased cattle were dead with 34% mortality rate and 40% case fatality rate. All ages were affected from two months up to ten years. The disease was observed in both sex in nearly equal rates.

Clinical observations showed that diseased cattle had the following signs; increase in the body temperature, which ranged between 39.8ºC up to 41.5ºC. The duration of fever was variable and extended up to 14 days in some animals. Feverish cattle showed off food, debility, salivation, harsh respiration, mucopurulant nasal discharge and sometimes decrease in milk production. Edema in the dewlap and limbs and/or enlargement of draining lymph nodes was observed. Cutaneous nodules localized intradermally and appeared in restricted areas or covered the entire of animal body. Nodules have been noticed also at mouth, nostrilies, eyes, joints, testes, prepuce, vulva and vaginal surface. The number and size of the nodules varied and reached hundreds in some cases. Sloughing off have been occurred in the center of the nodules which, together with the prolonged edema led to several complications due to secondary bacterial infection. Pneumonia was noticed in several cases and remained in affected animals even post their clinical recovery for several months.

Buffy coat samples were collected from diseased animals for virus isolation and identification. Virus isolation was done on both CAM of SPF-ECE and on

MDBK cell culture. In the third blind passage of the samples on ECE, CAM showed thickening with few fine grayish yellow discrete pocks of small and large sizes five days PI. Buffy coat inoculated on MDBK cells failed to produce characteristic CPE when incubated for seven days in the first three blind successive passages. Cellular changes began to appear by the fourth day PI during the fourth passage. Progress of cellular degeneration and cell detachment increased gradually in the further three successive passages.

Samples from infected CAM and MDBK cell culture were subjected to passive HA test using sheep RBCs sensitized with reference antisera against sheep pox. Sheep pox vaccinal strain and reference LSD 89 strain were used as positive controls while normal saline was used as negative control. Tested samples and the positive control viruses agglutinated the sensitized sheep RBCs while the negative control didn't agglutinate.

DNA extracts from viral infected CAM and MDBK were pooled and subjected to PCR using specific primer sets. Gel electrophoresis of the amplicon showed clear band that has an expected size (192bp). Positive and negative controls showed 192bp-sized amplicon and no product, respectively.

Serum samples from diseased animals obtained from the area under investigation (Beni-Suef, Al-Fayium governorates) and also from a dairy herd in Assuit governorate. The samples were tested by ELISA.

At Beni-Suef governorate, 14 out of 17 samples from Elwasta center were positive (82.35% positive percentage), 11 out of 15 samples from Beni-Suef center were positive (73.33% positive percentage) while 14 out of 20 samples collected from Elfashn center were positive (70% positive percentage). The overall positivity for samples from Beni-Suef governorate is 39 of 52 with 57% ratio.

At Al-Fayium governorate, three out of ten samples from Sennores center were positive (30% positive percentage), 11 out of 20 samples from Tamyia center were positive (55% positive percentage) while four out of five samples collected from Etssa center were positive (80% positive percentage). The overall positivity for samples from Al-Fayium governorate is 18 of 35 with 51.42% ratio.

At Assuit governorate, 19 out of 20 samples were positive (95% positive percentage).

Samples collected from female animals from different locations showed overall positive percentage 70.32 % (64 out of 91) while males showed overall positive percentage 75 % (12 out of 16).

The serum samples were classified into three groups according to the interval between appearance of clinical signs of the disease and the time of sample collection. The sera were collected within 1-20 days, 21-40days and after 40 days from the onset of clinical illness in the 1^{st} , 2^{nd} and 3^{rd} group, respectively. The positive percentages were 62.5, 70 and 87.09 % for the 1^{st} , 2^{nd} and 3^{rd} group respectively. Statistical analysis of the ELISA readings revealed that all groups showed significantly higher results than that of negative control. Sera in group 2 and 3 (collected after 20 days from clinical manifestation of the disease) showed significantly higher results than group 1 (collected 1-20 days from clinical manifestation of the disease).

Experimental infection of rabbits was also done to demonstrate their roles in the epizootiological process of the disease. Rabbit inoculated with both intradermal and intravenous route died within two days without showing any clinical disease. The other four rabbits showed localized skin lesions at the site of inoculation. Disease manifestations started by fever followed by erythema within four days post inoculation. Clear intradermal nodules were seen within six days post inoculation. Two nodules removed surgically for histopathological

examination. The others were observed daily till disappeared leaving scar tissue within 14 days PI.

Hisopathological examination of the skin lesion of both field and experimental cases showed acanthosis in the epidermis with hydropic degeneration and vesicle formation occurred in the prickle cell layer. Some of the epithelial cells suffered from necrosis. Large round to oval intracytoplasmic inclusions stained pink to purple showed in macrophages and fibroblasts. Inclusions were also seen in an extracellular position. The dermis showed cellular infiltration of lymphocytes, macrophages, neutrophils and fibroblasts with severe fibroplasia which is seen in the chronic cases. Oedema, necrosis and mononuclear cell infiltration are also present in hair follicles and sebaceous glands. Vasculitis with perivascular mononuclear cell cuffing and thrombosis are also observed.

Hisopathological examination of infected CAM of ECE showed vaccuolation, edema accompanied with cellular infiltration and necrosis.

A suggestive control program for LSD was discussed by this investigation.