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NOTE

Observation of Inclusion Bodies in Renal Epithelial Cells of Experimentally Infected Horses with African Horse-Sickness Virus

By:

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INTRODUCTION

Since the introduction of African horse-sickness (AHS) in the middle east countries on 1958 (19,20) an extensive study has been carried out on the disease and various problem associated with its control.

During this period attempts were made to investigate the route of natural transmission of the virus (17), attenuation of the virus in mice (4), adaptation to tissue culture (11, 15), use of this new host system for vaccine production (6, 12, 13) and study of different properties of virus (14).

The aim of this contribution is to report the observation of intra-cytoplasmic inclusion bodies in renal epithelial cells of experimentally infected horses with African horse-sickness virus in order to confirm Fotherringham's finding (3) and to evaluate it in the diagnosis of the disease.

MATERIAL AND METHODS

The material was obtained from 4 horses which were experimentally infected with virulent AHS virus from the 4th passage of an Iranian strain, 10/60-MB4, (4th passage of the virulent virus in suckling mouse brain). The inoculum was contained 6.3 X 10^6 LD_{50}/ ml. of the virus.

Systematic necropsy procedures were performed immediately after death. Samples from heart, kidneys, spleen, lungs and lymphnodes were collected for virus isolation and histopathological studies.

RESULTS

Post mortem findings as well as virus isolation from internal organs confirmed that the actual cause of death was AHS in all tested animals. The pathological aspects revealed a mixed form of disease predominantly cardial type.

The gross lesion and histopathological changes serially showed the same stage as described in classical AHS by Maurer et al. (10).

The most characteristic changes were seen in the kidneys. The kidneys were moderately enlarged and covered with large amount of yellowish gelatinous edema fat. There was 1-2 cm wide band of severe congestion and hemorrhage in the cut surface of kidneys.

Microscopic section of kidneys showed non specific focal interstitial nephritis. Severe congestion, dilation of the vessels and intense interstitial hemorrhages were present in the medulla specially in the corticomedullarly junction. Besides these changes many inclusion bodies were found in the epithelial cells of the urinary tubules. These inclusion bodies were located in the cytoplasm rather than in the nucleus. They stained deeply with eosin (pink or bright red) by Haematoxilin and Eosin and dark red by Macciavello's staining methods.

The urinary tubules showed intense degeneration, cells being swollen and packed with eosinophilic inclusion bodies of various size. From one to several inclusion bodies were present in some cells. There were no visible inclusion body in other organs except kidneys.

Morphologically these inclusion bodies were round, sharply demarkated and surrounded with a distinct clear halo, standing out clearly from the rest of the cells and being readily detected under the microscope. Their size was smaller than a red corpuscle and up to the size of a single epithelial cell.

In order to make sure of the specificity of these inclusion bodies in histopathological diagnosis of AHS, the tissues from two healthy horses were also collected in the same condition and followed the same method of slide preparation as subject horses. The inclusion bodies were not found neither in the renal epithelial cells, nor in the tissues of the any other organs of these healthy horses.

CONCLUSION

In addition to virus isolation (1) several serological methods, namely neutralization test (2, 5), complement fixation test (9), hemaglutination (8), and gel diffusion precipitation test (7) have been widely used for the diagnosis of the AHS. These methods although valuable in the diagnosis of the disease, are somehow time consuming, and thus a quick but reliable method has been sought. The presence of inclusion bodies in the renal epithelial cells observed in experimentally infected cases of AHS may serve as an aid for a quick diagnosis of the disease.

SUMMARY

Eosinophilic inclusion bodies of various sizes were found in the cytoplasm of urinary tubule epithelial cells in experimentally infected cases of African horse-sickness. These inclusion bodies seem to be pathogonomic for the disease.

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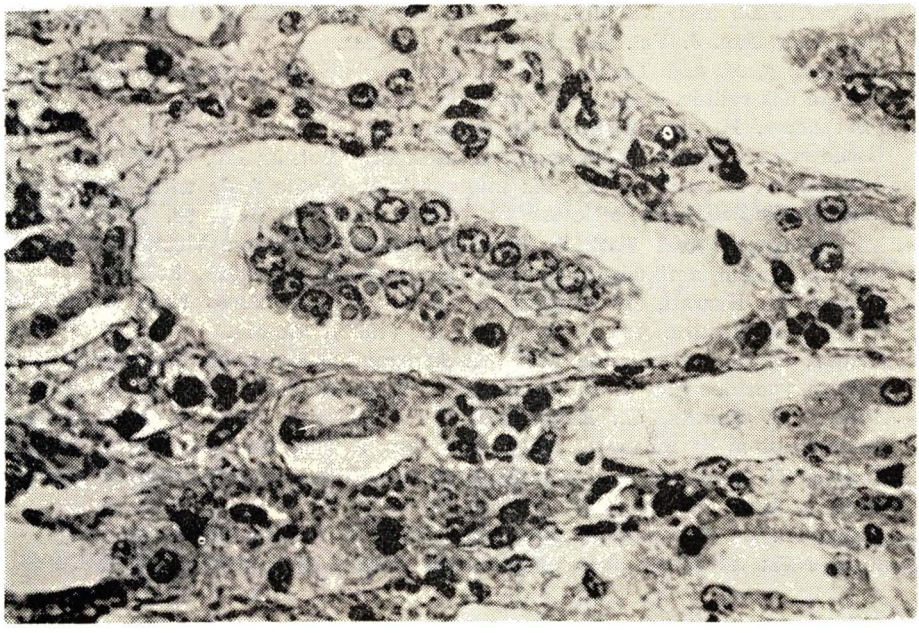

Cytoplasmic inclusion bodies in renal epithelial cells.

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