Demonstration of colonies of Cowdria ruminantium in midgut epithelial cells of Amblyomma variegatum

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Abstract:

The development of colonies of Cowdria ruminantium was studied in midgut epithelial cells of adult Amblyomma variegatum that had become infected by feeding as nymphs on cattle with experimentally induced heart-water disease. Colonies were not observed in gut tissues obtained from nymphs during the feeding period, but were present in midgut epithelial cells of ticks obtained at 15 days after they were replete through molting to the adult stage. Colonies were small (1 to 10 micron) initially, but as tick development progressed, their diameter increased to as much as 60 micron. With electron microscopy, colonies were observed to be membrane bound and contained pleomorphic organisms that were reticulated. The organisms seemed to be dividing by binary fission. Many colonies contained a large, electron-dense inclusion that was morphologically similar to hemoglobin deposits found in the cytoplasm of midgut epithelial cells of recently fed ticks. Cowdria ruminantium was often observed adhered to these inclusions.