DIFFERENTIATING THE CANINE ROUND CELLS
BY ELECTRON MICROSCOPY

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Round cell tumors which include transmissible venereal tumor (TVT), lymphoma, mast cell tumor and histiocytoma, are common diseases of the dog. Because their histological features are very similar, therefore, it is important to find a method for making a precise diagnosis. As many previous studies, the mast cell can be specifically differentiated by toluidine blue staining, therefore, in this study, the TVT cells were compared with histiocytoma and lymphoma cells by histological, immunohistochemical and ultrastructural examinations. The results showed that TVT cells always arranged compactly or grew in cords and were divided into some nests by a little fibrous connective tissue. The cells contained a round or ovoid nucleus and abundant cytoplasm. Similar result was found in the histiocytoma except the nuclei were pleomorphic. Contrarily, the lymphoma cells were round with various amounts of cytoplasm. In immunohistochemical staining, both TVT and histiocytoma cells were positive to vimentin, but negative to keratin, desmin, S-100, and neuron-specific enolase (NSE). No response could be found in the lymphoma. In ultrastructural observation, the nucleus of TVT cells contained abundant euchromatin with one or two prominent nucleoli. The cytoplasm contained many organelles, e.g. mitochondria, rough endoplasmic reticulum (RER), ribosomes, Golgi complex, lysosomes ect. Many microvilli protruded from the cytoplasmic membrane and interdigitated between two adjacent cells. In degenerated cells, the most obvious lesions were the dilatation of RER and mitochondrial swelling. On the other hand, the histiocytoma cells contained abundant cytoplasm with a moderate number of organelles, and the lymphoma cells contained little cytoplasm and few organelles only. According to the results of histologic, immunohistohistochemical and electron microscopic examinations, it is suggested that the ultrastructural features are the most differential among TVT, histiocytoma, and lymphoma cells. Therefore, the transmission electron microscopy is useful to differentiate the three similar round cell tumors.