CZU: 619:616.5-006.04-07:636.7

CANINE CUTANEOUS MAST CELL TUMOR: DIAGNOSTIC METHODS AND PROGNOSTIC MARKERS

Gagniuc Elvira[1,2], Dobrin Ana-Alexandra[1], Pîrvu Adina-Mihaela[1], Ciobotaru-Pîrvu Emilia[1], Militaru Manuella[1]
[1]University of Agronomic Sciences and Veterinary Medicine, Department of Pathology, Bucharest, Romania
[2]Department of Pathology, Synevovet Laboratory, Bucharest, Romania
E-mail: elvira.gubceac@gmail.com

Canine cutaneous mast cell tumor (CCMCT) is one of the most frequently diagnosed cutaneous tumors in dogs. The biological behavior of canine CCMCTs varies from benign to highly aggressive producing invasive growth and early metastasis. The study of prognostic factors represents one of the main research topics related to CCMCT.

Cytopathological diagnosis can be made by fine needle aspiration (FNA), by scraping techinque or through imprint method from surgically excised pieces, using May-Grunwald Giemsa staining, then the cytological grading is established using the method proposed by Camus (2016). Histopathological examination can be performed from samples collected by incisional or excisional biopsy, then routinely processed. Additional Toluidine Blue and Giemsa stains can be used. Histological grade of malignancy can be established using two systems, the first one was proposed by Patnaik (1984) – 3 grades of malignancy: grade I (well differentiated), grade II (moderately differentiated) and grade III (poorly differentiated), and the second system is proposed by Kiupel (2011) – 2 grades of malignancy for CCMCTs, low and high grade. Immunohistochemistry (IHC) can be performed for immunolabeling the KIT receptor (surface growth factor receptor, encoded by the c-kit proto-oncogene). Cell proliferation markers in predicting CCMCTs prognosis are represented by mitotic index (MI), argyrophilic nucleolar organizer region associated proteins (AgNOR), proliferating cell nuclear antigen (PCNA) and Ki-67.

Cytopathological diagnosis of CCMCT enables the observation of characteristic metachromatic cytoplasmic granules, even in degranulated or anaplastic neoplastic mast cells. *Camus*'s cytological grading classifies the canine mast cell tumors in well differentiated and poorly differentiated, these grades then being verified according to *Kiupel*'s grading system. Histopathological examination of CCMCTs confirms the cytological findings, allowing the usage of histological grading and assessment of tumor margins. According to *Patnaik*, grade I CCMCTs's behaviour is benign, while grade III tumors frequently recur and metastasize. Immunohistochemical staining of the KIT receptor facilitates differential diagnosis of this neoplasm from other round cell tumors, especially in the case of poorly differentiated CCMCTs. Understanding its biological behavior and prognostic factors is crucial to establish treatment methods and therefore improving the quality of life of individuals with CCMCT.

Keywords: canine cutaneous mast cell tumor, cytological grade, histological grade, immunohistochemistry, prognosis.