Survivin expression in canine lymphomas in relation with proliferative markers

J. Sokołowska¹, K. Urbańska¹, S. Giziński², A. Wysocka³, A. Cywińska⁴, R. Lechowski³

¹ Department of Morphological Sciences, Faculty of Veterinary Medicine, Warsaw University of Life Sciences – SGGW, Nowoursynowska 159, 02-776 Warsaw, Poland
² Department of Large Animal Diseases with Clinic, Faculty of Veterinary Medicine, Warsaw University of Life Sciences – SGGW, Nowoursynowska 100, 02-797 Warsaw, Poland
³ Department of Small Animal Diseases with Clinic, Faculty of Veterinary Medicine, Warsaw University of Life Sciences – SGGW, Nowoursynowska 159c, 02-776 Warsaw, Poland
⁴ Department of Pathology and Veterinary Diagnostic, Faculty of Veterinary Medicine, Warsaw University of Life Sciences – SGGW, Nowoursynowska 159c, 02-776 Warsaw, Poland

Abstract

Survivin is a member of apoptosis inhibiting proteins family. Apart from its antiapoptotic activity it plays a critical role in regulating the cell cycle and mitosis. It is overexpressed in most human malignancies. While the prognostic significance of survivin expression is widely investigated in human non-Hodgkin’s lymphomas, little is known about its expression in canine lymphomas. The aim of the study was to evaluate the expression of survivin in canine lymphomas in relation to proliferation markers (mitotic index and percentage of Ki67-positive cells). Survivin was found in all examined lymphomas belonging to 6 different morphological subtypes with nuclear immunoreactivity. In most of lymphomas (18/25) survivin expression ranged 10%-25% of positive cells. Only single cases had lower (0-10% positive cells, 1/25) or higher (25-50% and >50% positive cells, 5/25 and 1/25, respectively) index of survivin. Neither mitotic index nor proliferative index correlated with survivin expression when the values quantified randomly in whole specimens were compared. However, when survivin expression were quantified in selected tumor areas of low and high proliferation activity the high correlations between survivin expression and proliferation index were found. The results indicated that survivin is commonly expressed in canine lymphomas. Nuclear labelling together with the relation of its expression and proliferative activity in highly proliferative areas of neoplastic tissue suggest a potential role of survivin in cell cycle activation in canine lymphoma cells. However, further studies of the relation between expression of survivin and other proteins involved in cell cycle regulation are needed. Moreover, the results suggest that survivin may pose the therapeutic target in canine lymphomas.

Key words: dog, lymphoma, proliferative markers, survivin