

SERUM THYMIDINE KINASE CONCENTRATIONS IN HEALTHY VERSUS TUMOR-BEARING DOGS

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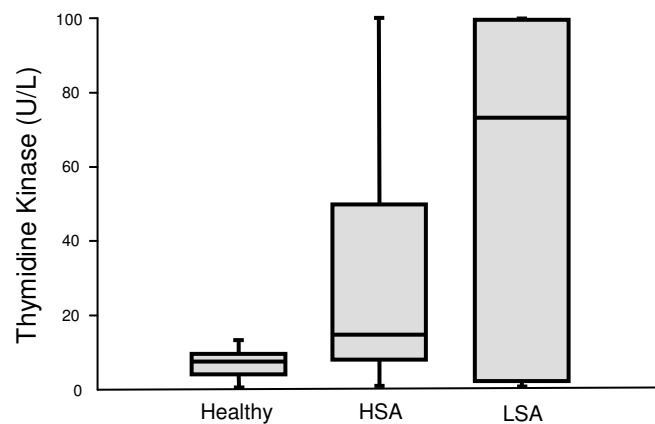
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Introduction: Proliferation indices have been histochemically evaluated in tumor tissue and can predict biologic behavior more precisely than tumor grade in some cases. Thymidine kinase (TK) is a soluble biomarker present in S-phase of a salvage pathway for DNA synthesis, and can be measured in serum. TK activity correlates with stage, prognosis, and relapse in dogs and humans with lymphoma. The purpose of this study was to compare TK concentrations among dogs with hemangiosarcoma and lymphoma to healthy dogs.

Methods: Serum samples previously stored at -80°C at the ACC-CSU were assayed: lymphoma (n=14, with 9 B-cell, 3 T-cell, and 2 null cell), and hemangiosarcoma (n=18). Sera from dogs with unremarkable history and physical exam comprised a control population (n=21). An ELISA using AZT as a TK1 substrate was used.

Results: TK activity was significantly higher than control ($p < 0.0001$) in dogs with hemangiosarcoma and lymphoma. There was a significant difference between B- and T- cell lymphoma (77 vs. 1.2 U/L, $p = 0.0035$). In 71% and 80% of dogs with lymphoma, and hemangiosarcoma, respectively, TK activity was above the normal range.

Fig 1: Comparison of serum thymidine kinase (TK) concentrations between the healthy, hemangiosarcoma and lymphoma groups. The upper and lower edges of the box represents the 75th and 25th percentiles respectively, whereas the line within the box is the median value. Whiskers represent the range. TK activity was significantly higher than control ($p < 0.0001$) in dogs with hemangiosarcoma (HSA) and lymphoma (LSA).



Conclusions: TK activity may be a useful for the early detection of canine lymphoma and hemangiosarcoma, and may help differentiate between lymphoma immunophenotypes in dogs.