How to Incorporate Cancer Screening Tests and Biomarkers into Your Practice

Biomarkers (biological markers) in veterinary medicine are a rapidly emerging area of interest. Biomarkers are defined as a "characteristic that is measured as an indicator of normal biological processes, pathogenic processes, or responses to an exposure or intervention, including therapeutic interventions"[1]. In veterinary oncology, there are a several biomarkers that have been evaluated and are commercially available[2]. As more and more biomarkers are identified and validated, they are likely to play a more significant role in the diagnosis and monitoring of cancer patients. However, understanding their clinical utility and limitations is of utmost importance and should never replace a full physical exam and diagnostic work up.

Cardiac Troponin I (cTnI)

cTnI is a sensitive and specific marker of cardiac myocyte damage. It has also been identified as a sensitive and specific marker of cardiac hemangiosarcoma in patients with hemangiosarcoma at other sites. Additionally, it can differentiate pericardial effusion due to cardiac hemangiosarcoma from non-neoplastic pericardial effusion[3]. In some cases, it can be difficult to identify a mass within the heart by echocardiogram, and you cannot always differentiate tumor from a blood clot when a mass is identified. In practice, this test could be useful in identifying cardiac involvement in patients with hemangiosarcoma at other sites, and would change the prognosis and monitoring of that patient.

Thymidine Kinase (TK1)

Thymidine kinase is an enzyme whose activity is related to DNA synthesis and thus is elevated in neoplastic processes. TK1 levels in the plasma are significantly higher in dogs with hemoabdomen and splenic mass versus normal healthy dogs and may be useful in differentiating benign versus neoplastic processes in these patients[4]. TK1 has also been evaluated in other cancer types and the tests are commercially available. Veterinary Diagnostics Institute (VDI) has two panels available: TK Canine Cancer Panel and the TK Feline Cancer Panel[5]. The canine panel evaluates TK1 and c-reactive protein (CRP). In patients who have a mass, or the clinician is highly suspicious of a neoplastic process, a high positive result means neoplasia is very likely. However, this is not diagnostic for any cancerous process and cytology or histology is still required. The feline panel evaluates TK1 with haptoglobin for the differentiation of GI lymphoma from IBD. As with the canine panel, this test needs to be used in conjunction with imaging tests (abdominal ultrasound) and cannot be used by itself to diagnose disease.

Canine Lymphoma Blood Test (cLBT)

Avacta Animal Health created a commercially available test (SENSITEST) that is marketed as a way to help diagnose lymphoma in cases where cytology may not be straight forward. Additionally, it is reported to be able to detect relapse of lymphoma prior to clinical relapse being identified. This test measures TK1 as well as haptoglobin and inputs values into an algorithm.

References

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5 *www.vdilab.com*.