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Comparison of methods used to diagnose generalized inflammatory disease in manatees (*Trichechus manatus latirostris*).

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Source

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Abstract

Manatees (*Trichechus manatus latirostris*) are afflicted with inflammatory and infectious disease secondary to human interaction, such as boat strike and entanglement, as well as "cold stress syndrome" and pneumonia. White-blood-cell count and fever, primary indicators of systemic inflammation in most species, are insensitive in diagnosing inflammatory disease in manatees. Acute phase-response proteins, such as haptoglobin and serum amyloid A, have proven to be sensitive measures of inflammation/infection in domestic large animal species. This study assessed diagnosis of generalized inflammatory disease by different methods including total white-blood-cell count, albumin: globulin ratio, gel electrophoresis analysis, C-reactive protein, alpha₂ acid glycoprotein, haptoglobin, fibrinogen, and serum amyloid A. Samples were collected from 71 apparently healthy and 27 diseased animals during diagnostic medical examination. Serum amyloid A, measured by ELISA, followed by albumin:globulin ratio, measured by plasma gel electrophoresis, were most sensitive in diagnosing inflammatory disease, with diagnostic sensitivity and specificity of approximately 90%. The reference interval for serum amyloid A is <10-50 microg/ml with an equivocal interval of 51-70 microg/ml. The reference interval for albumin:globulin ratio by plasma gel electrophoresis is 0.7-1.1. Albumin: globulin ratio, calculated using biochemical techniques, was not accurate due to overestimation of albumin by bromocresol green dye-binding methodology. Albumin:globulin ratio, measured by serum gel electrophoresis, has a low sensitivity of 15% due to the lack of fibrinogen in the sample. Haptoglobin, measured by hemoglobin titration, had a reference interval of 0.4-2.4 mg/ml, a diagnostic sensitivity of 60%, and a diagnostic specificity of 93%. The haptoglobin assay is significantly affected by hemolysis. Fibrinogen, measured by heat precipitation, has a reference interval of 100-400 mg/dl, a diagnostic sensitivity of 40%, and a diagnostic specificity of 95%.

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