Receiver-operating characteristic curves and likelihood ratios: improvements over traditional methods for the evaluation and application of veterinary clinical pathology tests - DTU Orbit (21/08/2019)

**Receiver-operating characteristic curves and likelihood ratios: improvements over traditional methods for the evaluation and application of veterinary clinical pathology tests**

Receiver-operating characteristic (ROC) curves provide a cutoff-independent method for the evaluation of continuous or ordinal tests used in clinical pathology laboratories. The area under the curve is a useful overall measure of test accuracy and can be used to compare different tests (or different equipment) used by the same tester, as well as the accuracy of different diagnosticians that use the same test material. To date, ROC analysis has not been widely used in veterinary clinical pathology studies, although it should be considered a useful complement to estimates of sensitivity and specificity in test evaluation studies. In addition, calculation of likelihood ratios can potentially improve the clinical utility of such studies because likelihood ratios provide an indication of how the post-test probability changes as a function of the magnitude of the test results. For ordinal test results, likelihood ratios can be calculated on a category-specific basis from the empirical data or by using the slope of the line joining adjacent category limits on the ROC curve. For continuous test results, data need to be categorized into intervals for estimation of likelihood ratios, or they can be calculated as the slope (tangent) to the ROC curve at a unique test value. We use ROC analysis and calculate likelihood ratios to evaluate the performance of tests reported in 2 articles previously published in this journal.

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