COMPARING DIAGNOSTIC TESTS: TEST OF HYPOTHESIS USING LIKELIHOOD RATIOS

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In addition to sensitivity and specificity, likelihood ratios are also used to characterize the behavior and/or efficiency of diagnostic tests. Several authors recommended the use of likelihood ratios over the use of sensitivity and specificity for binary test comparisons. An existing method for comparing likelihood ratios of diagnostic tests is a simple graphical approach that only compares the likelihood ratios in magnitude. Recognizing that the likelihood ratios are algebraically identical to relative risk ratios we introduced a hypothesis test for comparing likelihood ratios of two or more binary diagnostic tests via the test of homogeneity used for relative risks. The existing graphical method is somewhat noninferential and lacks some important aspects of sample size considerations. We suggested a method and showed with examples how our method works and with varying sample sizes how the existing graphical method can be misleading when compared to the suggested method. In conclusion, the proposed method is superior in the way that it takes into account all statistical aspects of significance testing while the other graphical method does not.