COMBINING DIAGNOSTIC TESTS BY USING MULTIVARIATE LOGISTIC REGRESSION FOR OPTIMAL CLASSIFICATION AND APPLICATION: APPLICATION TO CHRONIC HEPATITIS B DATA

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First, the comparing of logistic regression and ROC curve analyses about success at diagnosing on individuals has been made when each group has unequal number of object. Second, it has been shown that multivariate logistic regression analysis can be used as multivariate ROC curve analysis. A simulation study has been planned for realizing the first aim. It has been tried for 500 times. Both logistic regression and ROC curve analyses have been applied for data in each trial. In the second aim, we used data that were taken from Ankara University, Faculty of Medicine, Department of Gastroenterology. A multivariate model has been taken from for being able to distinguish the individuals who have Chronic Hepatitis B infection from the individuals who carry this virus by being used age, gender, serum alanine aminotransferase and test results of DNA with Polymerase Chain Reaction. When the sample sizes are equal and large, correct classification probabilities of logistic regression and ROC curve analyses are same. In contrast, when the sample sizes are unequal, correct classification probabilities of ROC curve analysis is not changed. In addition, multivariate logistic regression model can be used as multivariate ROC curve analysis.