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Added Predictive Value of Repeated Primary Investigation Examination for Choledocholithiasis: A Cohort Study

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Abstract

Background: The parameters used for predicting choledocholithiasis include clinical presentations, liver function tests, and imaging. Moreover, prediction is essential so as to select suitable therapeutic modalities, which are typically not available in primary hospitals. Thus, a time gap commonly occurs. In this study, we aimed to assess the incremental yield of choledocholithiasis prediction if liver function tests or ultrasonography were repeatedly performed.

Methods: This was a retrospective cohort study of choledocholithiasis reference tests conducted from January 2019 to June 2021. Repeated examinations were frequently available in the department protocol. Eligible patients who underwent repeated liver function tests or ultrasonography were included. The main outcome was analyzed using logistic regression and receiver operating characteristic analyses, which compared the first investigation and the repeated investigation.

Results: Among all the patients, 424 and 146 underwent repeated liver function tests and ultrasonography, respectively. All repeated liver function tests predicted choledocholithiasis; however, only alkaline phosphatase test in the first investigation predicted choledocholithiasis. All imaging parameters in both first and repeated examinations were associated with the presence of stones. However, repeated ultrasonography showed lower false-positive but higher false-negative for choledocholithiasis detection. With regard to the comparison of predictive abilities, the area under the receiver operating characteristic curve for repeated liver function tests and repeated ultrasonography increased from 0.77 to 0.82 (p value of <0.01) and from 0.79 to 0.85 (p value = 0.03), respectively.

Conclusion: Repeated liver function tests or ultrasonography increased the predictive ability to diagnose choledocholithiasis.

Key words: biomarkers, choledocholithiasis, diagnostic imaging, receiver operating characteristic analysis