**Scientific Research Process**

1 What did this study explore?

To explore the diagnostic value of a laparoscopic finding of a hepatic subcapsular spider-like telangiectasis (HSST) sign in biliary atresia (BA).

2 How did the authors perform all experiments?

This clinic research includes two independent parts: a retrospective study to investigate the HSST sign in laparoscopic images in cholestasis cases and a control group, and a prospective study to validate the diagnostic value of HSST sign in an independent cohort composed of 45 BA and 45 non-BA patients. In the retrospective study, laparoscopic images (5mm or 10mm optical laparoscopy, pediatric HOPKINS II 26003BA, STORZ, Germany) of the liver surface were evaluated by two observers separately and blindly (Zhou Y and Jiang M) to screen for the presence or absence of a HSST sign. The HSST sign was preliminarily defined as enlarged tortuous spider-like vascular plexuses distributed on the liver surface. In the prospective study, all enrolled patients underwent laparoscopic exploration for the HSST sign before laparoscopic cholangiography (LAC). The patient was considered to be BA when a HSST sign was detected. The final diagnosis was confirmed by LAC. For both parts, the sensitivity and specificity were calculated for the HSST sign

3 How did the authors process all experimental data?

The results were expressed as the mean ± SD or number (percentage). For quantitative data, statistical significance between individual groups was tested with a two-sample *t* test. For qualitative data (sex), significance between groups was tested with a Chi - squared test. The cut-off values for optimal clinical performance (best sensitivity and best specificity simultaneously) of individual parameters were determined from the receiver-operating characteristic (ROC) curve. Sensitivity and specificity were calculated for the HSST sign with the method of Wilson. Individual readings were calculated first; consensus readings were calculated thereafter (by professor Tang ST). Meanwhile, we applied Cohen's κ coefficient to assess the agreement between the analyses conducted by the two observers. Logistic regression analysis was applied to determine whether the presence of the HSST sign was useful in discriminating BA. A P-value of < 0.05 showed statistical signiﬁcance. The SPSS 13.0 software (SPSS, IL, USA) was used for data analysis.

4 How did the authors deal with the pre-study hypothesis?

Color Doppler ultrasound finding of hepatic subcapsular flow has shown much potential for discriminating BA. However, most of the neonates or infants were uncooperative during color Doppler US examination. And the result was also effected by many other factors, such as the doctor’s experience, machines, and patients’ respiration intensities. While in clinical practice, we have noticed a similar but more intuitive phenomenon— laparoscopic finding of hepatic subcapsular spider-like telangiectasis (HSST) sign. Thus, we hypothesized that this phenomenon may be a specific marker for BA.

5 What are the novel findings of this study?

According to our preliminary investigation, HSST sign showed promising diagnostic performance for differentiating BA from any other cholestasis diseases, such as infantile cholestasis and cholestatic syndrome. We found that the sensitivity and specificity of a HSST sign were each generally close to 100%.