PTU-054 ★ EVALUATION OF FIBROBLAST GROWTH FACTOR 19 IN THE DIAGNOSIS OF BILE ACID DIARRHOEA

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Introduction The prevalence of bile acid diarrhoea (BAD) is estimated to be 1%, but the condition remains under diagnosed, partly because the selenium homocholic acid taurine (SeHCAT) test is not widely available. Fibroblast Growth Factor 19 (FGF19) produced in the terminal ileum in response to bile acid absorption plays an important role as a negative regulator of bile acid synthesis and low median FGF19 levels were shown in patients with primary BAD. The aim of this study was to evaluate the relationship between fasting FGF19 levels and SeHCAT in a large prospective group of patients defined by SeHCAT results. We also compared FGF19 levels at the time of colonoscopy in order to assess the effect of bowel preparation.

Methods Patients recruited with chronic diarrhoea had SeHCAT testing as part of routine workup and provided fasting blood samples. Group 1 (n=74) were diagnosed as having BAD with a SeHCAT value of less than 15% and included patients with any of the possible causes of BAD. Group 2 patients (n=63) had SeHCAT values of greater than 15%. Serum FGF19 was measured in all patients by ELISA. Data were analysed to compare the relationship between FGF19 and SeHCAT in both groups. 17 patients had additional blood samples taken before colonoscopy after a standard bowel prep.

Results FGF19 and SeHCAT were positively related (r=-0.49 Spearman rank correlation). The median FGF19 values in Group 1 and Group 2 were 146 pg/ml and 242 pg/ml respectively ($p<0.001$, Mann-Whitney). The optimum sensitivity and specificity for FGF19 were at a level of 150 pg/ml (47% and 89% respectively) based on a SeHCAT cut off value of 15%. For a SeHCAT cut off value of 10% the optimum sensitivity and specificity for FGF19 were at a level of 146 pg/ml (58% and 85%). The area under the curve on a ROC analysis for predicting BAD was 0.72 (95% CI 0.63 to 0.80) for FGF19 compared to SeHCAT of <15%, with a positive predictive value of 83% and a negative predictive value of 62%. The median FGF19 level in patients with chronic diarrhoea prior to colonoscopy compared to a random fasting FGF19 level was 103 pg/ml and 158 pg/ml respectively ($p< 0.044$, Wilcoxon test).

Conclusion The use of SeHCAT to diagnose BAD is currently the gold standard test of choice, but has its limitations. In this large prospective group we have shown a positive correlation between SeHCAT and FGF19. Potentially FGF19, which is a simple blood test, could be utilised as an alternative diagnostic or screening test for this condition. Further development and refinement to account for factors such as obesity, timing of a sample, and the effect of bowel preparation for colonoscopy may improve the sensitivity and specificity of the test.

Competing interests None.

Keywords Bile Acid Diarrhoea, Fibroblast Growth Factor 19, SeHCAT.