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Biopsy avoidance strategy in adult Coeliac Disease

Introduction:
Currently, the diagnosis of Coeliac disease (CD) requires the presence of villous atrophy (VA) on duodenal biopsy. However, biopsies are expensive, invasive and poorly tolerated by many patients. Paediatric ESPGHAN guidelines support a diagnosis of CD when immunoglobulin-A anti-tissue transglutaminase (IgA tTG) antibody titres are greater than 10 times the upper limit of normal (ULN) and combined with supportive criteria. This study examines whether serological testing alone could be sufficient for diagnosis in adult patients, thus avoiding the need for gastroscopy and duodenal biopsies.

Aims and Methods:
The aim of this study was to assess whether an IgA tTG value of greater than 10 times the ULN could produce a 100% positive predictive value (PPV) for the detection of VA. We performed a prospective analysis of CD patients diagnosed in a University hospital. Symptoms of CD, VA on biopsy, IgA-endomysial (IgA-EMA) antibodies, tTG and Human Leukocyte Antigen (HLA) genotype were used for analysis. We then compared the TTG antibody level against small bowel histology.

Results:
443 CD patients (66.8% female, median age 41 years, range 15-84 years) were diagnosed between 2008 and 2016. 56.9% (n=252, 95% CI= 52.12-61.53) had a tTG value of greater than 10 times the ULN, and 100% of these patients had VA on biopsy. 292 fulfilled ESPGHAN guidelines for features of malabsorption (diarrhoea=157, weight loss=45 and anaemia=190). Of these symptomatic patients, 70.4% (n=179, 95% CI= 64.86-76.08) had a tTG value 10 x ULN. The proportion reaching the 10 x tTG threshold was 55.4% (n=87, 95% CI=47.64-63.19) for diarrhoea, 60.0% (n=27, 95% CI=45.69-74.31) for weight loss, and 74.2% (n=141, 95% CI=67.99-80.43) for anaemia. Of the 151 patients who did not experience malabsorptive features, 49.0% met the 10 x ULN tTG level (n=74, 95%CI= 41.03-56.98). The sensitivity of tTG antibodies and EMA antibodies for predicting VA was 93.2% (95% CI=90.89-95.57) and 90.7% respectively (95% CI=88.05-93.44). Combined tTG and EMA was 98.6% (95% CI=97.67-99.72). All patients had compatible HLA typing, thereby failing to add any further diagnostic value.

Conclusions:
An IgA tTG level of >10 times the ULN had a PPV of 100% for detecting VA. Using this threshold, 56.9% of patients would have been correctly diagnosed with CD and avoided duodenal biopsy. Symptoms and HLA typing did not add any supportive information. This study provides evidence that a biopsy avoidance strategy may be implemented into adult gastroenterological practice.