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Who is at risk of coeliac disease? Prospective case finding in a luminal gastroenterology service

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Coeliac disease has been shown to affect one in 100–200 individuals. Despite this high prevalence the majority of individuals go undetected, meaning that for every patient identified a further eight individuals are estimated to have been missed. Furthermore, many patients present with atypical or subtle symptoms, which may also contribute to lack of case finding. The aim of the present study was to test for coeliac disease routinely in a large cohort of patients referred to secondary care to determine the relative importance of different characteristics and risk factors to try and determine pre-biopsy risk.

Patients referred to the unit for investigation of luminal gastroenterological problems were screened for coeliac disease using anti-gliadin, anti-endomyseal and anti-tissue transglutaminase antibodies along with an IgA level. Demographic details, reason for referral and comorbidities were noted. Patients with positive antibody profiles or selective IgA deficiency were offered a duodenal biopsy. Any duodenal biopsies taken were graded according to the modified Marsh criteria, with grade ≥ 3 being diagnostic for coeliac disease.

A total of 3743 patients were assessed (mean age 55.6; 2173 females). In total 369 patients had positive profiles (9.9 (95% CI 8.9, 10.9) %), of which 125 had Marsh grade ≥ 3 changes (3.3 (95% CI 2.8, 3.9) %). Univariate analysis showed that the risk of a diagnosis of coeliac disease is associated with female gender (OR 1.4), age <55 years (OR 1.8), weight loss (OR 2.8), irritable bowel syndrome symptoms (OR 2.9), anaemia (OR 4.7), diarrhoea (OR 4.2), positive antibodies or need for duodenal biopsy (OR 26.4) and miscellaneous diagnoses (OR 5.2). When analysing the comorbidities univariate analysis revealed that an increased risk of coeliac disease was associated with osteoporosis (OR 5.1), autoimmune disease (OR 5.4) and a family history of coeliac disease (OR 6.2).

Multivariable analysis stepwise linear regressions showed that family history ($P=0.003$), autoimmunity ($P=0.001$), anaemia ($P=0.045$), diarrhoea ($P=0.037$) and tissue transglutaminase antibodies (tTG) positivity ($P<0.0001$) were independent risk factors for a diagnosis of coeliac disease.

	Sensitivity	Specificity	Positive predictive value	Negative predictive value
EMA only	72	98.2	0.57	0.99
tTG only	81.6	93.9	0.31	0.99
EMA/tTG	63.2	99.1	0.7	0.99

EMA, endomysial antibodies. Endomyseal positivity increased significantly with increasing Marsh grade.

In summary, coeliac disease accounted for one in thirty referrals to the unit, which is higher than the population prevalence. Modelling of the risk factors found in the present study may provide a risk score to determine who does and who does not require a duodenal biopsy. Further work is required to determine whether this approach is cost effective.