

COELIAC DISEASE AND TYPE 1 DIABETES



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1. Epidemiology, diagnosis, effect of gluten-free diet

Background

Traditional studies, both in children and adults, have shown that CD occurs in patients with T1D with a prevalence that varies from 1.5 to 10 % compared with 1 % of the general population (Cronin & Shanahan, 2007; Vaarala, 2000). Non-gastrointestinal or atypical symptoms of CD include short stature, pubertal delay, fatigue, vitamin deficiencies, and iron deficiency anemia and are more commonly observed in older children, but many patients are asymptomatic (silent CD, Holmes, 2001a; Ventura et al., 2000). Diagnostic criteria need to be validated in this special group of T1D patients.

Future perspectives

New prospective multicentric study on application of ESPGHAN guidelines in DM1 patients (Franzese, Mozzillo, Fattorusso, Casertano): main focus on need of biopsy and level of transglutaminases antibodies, in collaboration with Group of Pediatric Diabetes of Italian Society of Pediatric Endocrinology and Diabetology.

Publications

1. Camarca ME, Mozzillo E, Nugnes R, Zito E, Falco M, Fattorusso V, Mobilia S, Buono P, Valerio G, Troncone R, Franzese A. Celiac disease in type 1 diabetes mellitus. *Ital J Pediatr.* 2012;Mar 26; 38:10. doi:10.1186/1824-7288-38-10. Review. PubMed PMID: 22449104; PubMed Central PMCID: PMC3348012

2. Franzese A, Iafusco D, Spadaro R, Cavaliere O, Prisco F, Auricchio R, Troncone R, Valerio G. The Study-Group on Diabetes of Italian Society of Pediatric Endocrinology and Diabetology. Potential celiac disease in type 1 diabetes: A multicenter study. *Diabetes Research in Clinical Practice*. 2011; Vol. 92, No. 1, pp. (53-56), 0168-8227.
3. Franzese A, Lombardi F, Valerio G, Spagnuolo MI. Update on Coeliac Disease and Type 1 Diabetes Mellitus in Childhood. *Journal of Pediatric Endocrinology and Metabolism*. 2007; Vol. 20, No. 12, pp. (1257-1264), 0334-018X.
4. Valerio G, Maiuri L, Troncone R, Buono P, Lombardi F, Palmieri R, Franzese A. Severe clinical onset of diabetes and increased prevalence of other autoimmune diseases in children with coeliac disease diagnosed before diabetes mellitus. *Diabetologia*. 2002; Vol. 45, No. 12, pp. (1719-1722), 0012-186X.
5. Valerio G, Spadaro R, Iafusco D, Lombardi F, Del Puente A, Esposito A, De Terlizzi F, Prisco F, Troncone R, Franzese A. The influence of gluten free diet on quantitative ultrasound of proximal phalanges in children and adolescents with Type 1 Diabetes mellitus and celiac disease. 2008; *Bone*, Vol. 43, No, pp. (322-326), 8756-3282.

2. Immune mechanisms

Background

Some authors speculated that in genetically susceptible patients gluten could be responsible not only of coeliac disease, but play a role also in the pathogenesis of T1D.

Main achievements

Our group has observed a gluten-related inflammation both in rectal both in small bowel mucosa of children with T1D.

Meta-immunological profiling of children with type 1 Diabetes is peculiar and can induce useful elements to predict disease progression.

Future perspectives

- to study abnormal immunologic profiling in children with type 1 diabetes mellitus and additional autoimmune disease (Franzese, Galgani, Matarese, Mozzillo, Fattorusso)
- to explore if immunological abnormalities are useful to design a prognosis of type 1 diabetes or pre-diabetes.

Publications

1. Farina F, Picascia S, Pisapia L, Barba P, Vitale S, Franzese A, Mozzillo E, Gianfrani C, Del Pozzo G. *G HLA-DQA1 and HLA-DQB1 Alleles, Conferring Susceptibility to Celiac Disease and Type 1 Diabetes, Are More Expressed Than Non-Predisposing Alleles and Are Coordinately Regulated Cells.* 2019;8, 751; doi:10.3390/cells8070751.
2. De Rosa V, Galgani M, Porcellini A, Colamatteo A, Santopaolo M, Zuchegna C, Romano A, De Simone S, Procaccini C, La Rocca C, Carrieri PB, Maniscalco GT, Salvetti M, Buscarinu MC, Franzese A, Mozzillo E, La Cava A, Matarese G. *Glycolysis controls the induction of human regulatory T cells by modulating the expression of FOXP3 exon 2 splicing variants.* *Nat Immunol.* 2015; 16(11):1174-84. doi:10.1038/ni.3269. Epub 2015 Sep 28.
3. Galgani M, Nugnes R, Bruzzese D, Perna F, De Rosa V, Procaccini C, Mozzillo E, Cilio CM, Elding Larsson H, Lernmark A, La Cava A, Franzese A, Matarese G. *Meta-immunological profiling of children with type 1 diabetes identifies new biomarkers to monitor disease progression.* *Diabetes.* 2013; 62(7):2481-91. doi:10.2337/db12-1273. Epub 2013 Feb 8. PubMed PMID: 23396400; PubMed Central PMCID: PMC3712055.

