

picture in 36%, dilatation of intra-/extra-hepatic ducts without obstacles in 26% and a typical picture of ASC in 38%. Median follow-up was 7.5 years. At histological re-evaluation evidence of disease progression to F3/4 fibrosis was present in 50% and radiological evidence of sclerosing lesions in 64 %. In nine patients imaging follow-up documented evolution from normal or dilated bile duct to ASC. However, fully recovery on immunosuppressive treatment of dilated bile ducts was documented in three out of seven patients. Two patients underwent orthotopic liver transplantation.

Conclusion. AC in childhood is a slowly progressive disease, strictly associated to IBD and distinct from AIH. Progression toward ASC is frequent but not mandatory.

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FOOD ALLERGY IN LIVER TRANSPLANTED CHILDREN

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Background and aims. Calcineurin inhibitors – mainly tacrolimus – are involved in paediatric organ transplant-acquired food allergy (TAFA) as a result of imbalance between Th1/Th2 cells. Incidence varies among series. We evaluated the incidence of TAFA in 91 Italian liver transplanted children and looked at whether peripheral eosinophilia and/or elevated total IgE are common findings in this condition.

Material and methods. A retrospective charts review of 91 children who underwent liver transplantation was performed. Biliary atresia was the most common indication (76%). Sixty-six patients were taking tacrolimus, 25 cyclosporine. Intestinal, respiratory and cutaneous allergic signs and symptoms, total (normal values according to age) and specific IgE (normal values <0.35 KU/l) for most common food allergens and eosinophils count (normal values <450 mm³ and/or <6% WBC) were recorded.

Results. More than half of liver transplanted patients taking tacrolimus had eosinophilia (55%) and increased total IgE (52.6%) versus 12% ($p < 0.001$) and 32% ($p = \text{NS}$) of those taking cyclosporine, respectively. 13/91 (14%) patients developed clinical symptoms suggestive of single ($N = 5$) or multiple ($N = 8$) food allergy at the age of 3.1 ± 3.0 years (range 0.8–11). All of them (100%) were taking tacrolimus. Age at transplantation of TAFA patients was significantly lower than that of patients without TAFA (0.9 ± 0.3 years; range 0.4–1.4 vs. 4.2 ± 4.5 years; range 0.4–18; $p = 0.0088$). None had relevant abnormalities of liver tests. Eosinophils count was elevated in 7/13 (54%); total IgE were elevated in 13/13. The most common food allergens were legumes (8/13) and egg (6/13). Angioedema was the most common clinical sign ($N = 9$; associated with urticaria in 2 of them), followed by isolated urticaria ($N = 2$) and GI symptoms ($N = 2$). 12/13 patients responded to exclusion of the most probable clinical triggering food allergen(s), although 3 of them presented minor relapses. One patient with multiple food allergy dependent giant urticaria needed switching to cyclosporine to control TAFA symptoms followed by successful reintroduction of food allergens.

Conclusions. Our results confirm that tacrolimus plays a relevant role in triggering TAFA and show that early age at liver transplantation may be an additional risk factor. Eosinophilia (especially in patients taking tacrolimus) and increased serum total IgE are a frequent finding in liver transplanted children with and without TAFA. Food allergy should be included in the list of not uncommon complications in early liver transplanted pediatric patients taking tacrolimus. Switch to cyclosporine should be proposed if TAFA symptoms persist after exclusion diet.

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GASTRO-OESOPHAGEAL REFLUX AND CHRONIC UNEXPLAINED COUGH IN CHILDREN: USE OF COMBINED MULTICHANNEL INTRALUMINAL IMPEDANCE AND PH-METRY (MII-PH)

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The prevalence of relationship between gastro-oesophageal reflux disease (GERD) and chronic cough in children is estimated to be 15%. Although oesophageal acid reflux has traditionally been considered the most important cause, it has recently been suggested that non-acid reflux may have a role in the genesis of chronic cough.

Aim. We aimed at assessing the temporal relationship between cough and different types of reflux (acid, weakly acidic, weakly alkaline), as measured by multichannel intraluminal impedance and pH monitoring (MII-pH), and at comparing the reflux patterns between children with reflux-related cough and those with typical symptoms of erosive reflux disease (ERD).

Methods. Thirty-two children (median age 5.8 years; range 1–12 years) with unexplained chronic cough underwent 24-h MII-pH. The MII-pH parameters evaluated were: total numbers of reflux episodes (TN), numbers of acid reflux episodes ($\text{pH} < 4$; AR), weakly acidic reflux episodes ($\text{pH} 4\text{--}7$; MAR), weakly alkaline reflux episodes ($\text{pH} > 7$; NAR) and height of refluxate (proximal, intermediate, distal extension). Symptom index (SI) was also evaluated. The 24-h MII-pH was considered abnormal on basis of quantitative (oesophageal acid exposure was $> 5\%$) or qualitative analysis (symptom index $> 50\%$). Controls consisted of 17 children (median age 5.3 years; range 1–14 years) with typical gastrointestinal symptoms and ERD.

Results. Twenty children (62%) were classified as chronic cough-related GERD (CRG), whereas in the remaining 12 (37%) no relationship between cough and GER was found. A total of 1487 and 1260 reflux episodes were detected in children with CRG and in controls, respectively. No differences in the proportion of AR, MAR and NAR were found between the two groups [CRG group: AR 1049 (70%), MAR 260 (17%), NAR 178 (13%); Controls: AR 857 (68%), MAR 251 (20%), NAR 152 (12%); $p > 0.05$]. Although in both groups the majority of reflux episodes had proximal extent, the proportion was significantly higher in controls [CRG: 936/1487 (63%); controls: 857/1260 (68%; $p < 0.05$)]. In CRG group, a total of 209 cough were recorded, and 102 (49%) were temporally related to reflux episodes: 74 (73%) with AR, 28 (27%) with MAR and NAR ($p < 0.01$). Cough bursts during the study were recorded in 16 of CRG children, and among them 11 (69%) patients had a positive SI [6 (37.5%) with AR, 3 (19%) with AR and NAR, and 2 (12.5%) with NAR], whereas 5 (31%) had a negative SI.

Conclusions. In children with chronic cough-related GERD, non-acid reflux plays an important role in the genesis of symptom. MII-pH, providing a temporal relationship between cough and the different reflux types (acid, weakly acid, weakly alkaline), increases the yield of standard pH testing in identifying positive symptom indices. Finally, the type and the proximal extent of reflux episodes seem to be not involved in the genesis of cough, suggesting that different factors may underlie clinical expression of the disease.

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