ISLET ANTIBODY POSITIVITY ACCORDING TO AGE AND GLUCOSE TOLERANCE IN CYSTIC FIBROSIS: SYSTEMATIC REVIEW AND META-ANALYSIS

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Objectives and Study

With chronic inflammation, recurrent infections, and dysbiosis, people with CF (pwCF) are predisposed to autoimmunity. However, the **role of autoimmune-mediated pancreatic beta cell damage is yet unclear** in the development of cystic fibrosis-related abnormal glucose tolerance (CF-AGT). We aimed to assess the **prevalence of various** autoantibodies **(AABs) according to age and glucose tolerance** and the **risk** associated with islet **AAB positivity** for **developing CF-AGT**.

Methods

A systematic search across four databases (CENTRAL, Embase, PubMed, Web of Science) identified studies reporting on AABs against glutamic acid decarboxylase (**GADA**), insulin (**IAA**), islet cell (**ICA**), insulinoma-associated protein 2 (**IA-2A**), and zinc transporter 8 (**ZnT8A**) in pwCF (CRD42020155846). **Prevalence and odds ratios** (OR) were calculated with 95% confidence intervals (CI) using a random effects model **with subgroup analysis by glucose tolerance and age**.

Results

Analysis of 20 eligible articles (2283 pwCF) revealed an overall prevalence of **any islet AAB positivity at 4%** (CI: 2-9%) and **multiple positivity at 1%** (CI: 0-11%). **IAA** showed the **highest prevalence at 6%** before insulin administration (CI: 3-14%), followed by GADA at 5% (CI: 2-11%). IA-2A and ICA had prevalence rates of 2% (CI: 1-7%) and 1% (CI: 0-9%), respectively. Generally, AAB **prevalence was higher in children** compared to adults, **and CFRD** vs. Non-CFRD (5% (CI:1-20%) vs. 3% (0-14%) and 5% (CI: 2-17%) vs. 4% (CI: 1-13%)). Notably, the **odds for multiple and any AAB positivity** were **significantly higher** among pwCF with **CFRD** (OR 2.71 (CI: 1.49-4.93) and OR 2.82 (CI: 1.22-6.51)). The **strongest association** was observed for **GADA, with OR 4.63** (CI: 3.42-6.28). Results for **ICA and IA-2A** were also **statistically significant** (OR 3.57 (CI: 1.05-12.18) and OR 2.36 (CI: 1.29-4.34)).

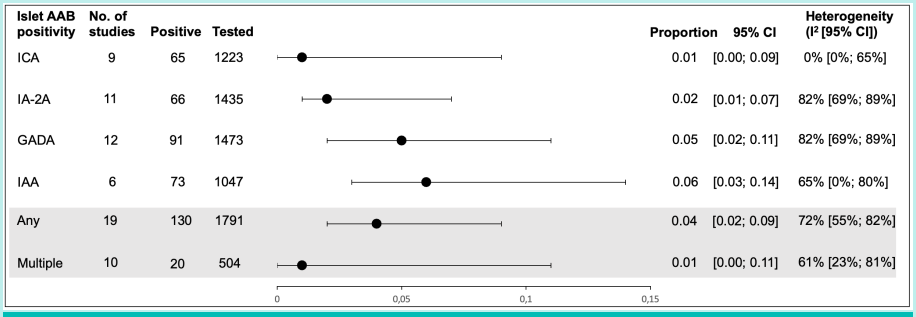

Fig.1. Prevalence of islet AAB positivity in pwCF

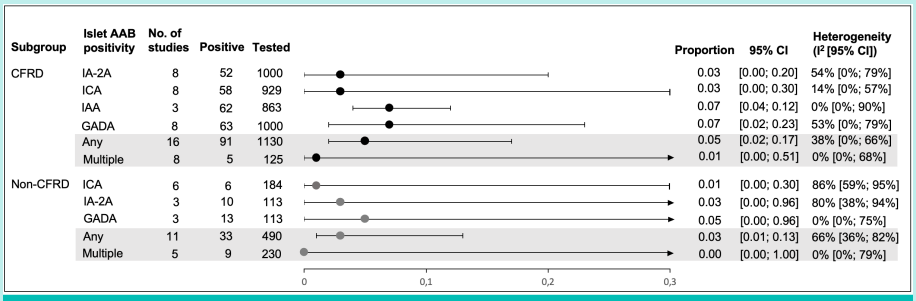

Fig.2. Prevalence of islet AAB positivity in pwCF by glucose tolerance

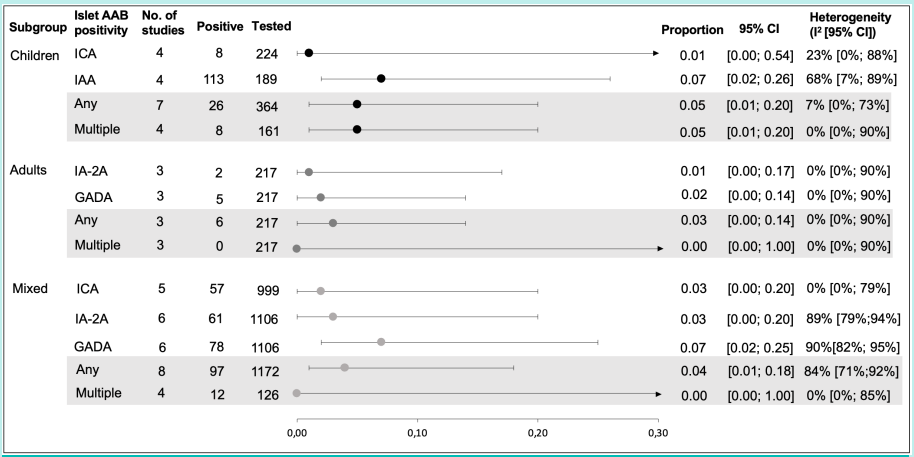

Fig.3. Prevalence of islet AAB positivity in pwCF by age

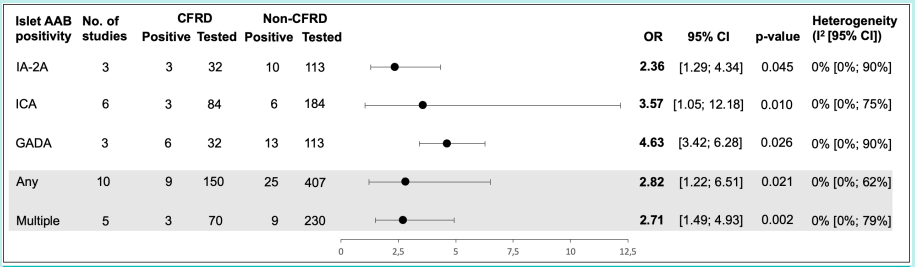

Fig.4. Odds of islet AAB positivity in CFRD vs. Non-CFRD pwCF

Conclusions

While **islet AAB prevalence** remains **low in pwCF** overall, **higher AAB prevalence** was detected **in childhood**, and **AAB positivity was associated with CFRD**, emphasizing the **need for early screening**. Timely intervention in these high-risk groups is essential to manage early-onset CF-AGT and prevent potential complications.

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