Change in HbA1C predicts future abnormal Oral Glucose Tolerance tests in children and adolescents with Cystic Fibrosis.

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INTRODUCTION

- The diagnosis of Cystic Fibrosis Related Diabetes (CFRD) is made from the start of insulin therapy.
- The oral glucose tolerance test (OGTT) is the ‘Gold standard’ screening choice for CFRD.
- HbA1C is considered unreliable in diagnosing CFRD because of increased red cell turn over in children and adolescents with Cystic Fibrosis (CF).

AIM

- To determine the validity of HbA1C as a predictive tool for future abnormal OGTT in CF.

METHOD

- Results for OGTT, HbA1C (within 3 month of OGTT) and need for insulin treatment were obtained from records of CF patients over a 15 years period (January 2004 to December 2018).
- The sensitivity and specificity of HbA1C to detect CFRD on OGTT or CFRD based on need for insulin treatment were calculated.
- The sensitivity for HbA1C and OGTT in detecting CF patients needing insulin therapy was compared.

RESULTS

- Table 1. Demographic data
  - Total cases reviewed: 180
  - Total cases included: 150
  - Gender: Male=69, Female = 81
  - Mean age at testing: 11.9(6-17) yr

- Table 2. Sensitivity and specificity of HbA1C (> 42 mmol/mol) to detect CFRD on OGTT and CFRD based on need for insulin.
  - CFRD (on OGTT): Sensitivity 68.4%, Specificity 84.3%
  - CFRD (on need for insulin): Sensitivity 64.5%, Specificity 89.1%

- Table 3. Sensitivity and specificity of HbA1C (> 40 mmol/mol) to detect CFRD on OGTT and CFRD based on need for insulin.
  - CFRD (on OGTT): Sensitivity 78.9%, Specificity 67.9%
  - CFRD (on need for insulin): Sensitivity 74.2%, Specificity 71.4%

- Table 4. Comparison of sensitivity of HbA1C and OGTT in detecting CFRD needing insulin

- Figure 1. Proportion of OGTT results
- Figure 2. Breakdown of abnormal OGTTs
- Figure 3. Mean HbA1C of different OGTTs
- Figure 4. Mean HbA1C trend for all abnormal OGTTs
- Figure 5. Mean HbA1C trend for indeterminate, impaired and CFRD OGTTs

INFERENCEn

- HbA1C (>42 mmol/mol) is more sensitive than OGTT in detecting CFRD patients who need insulin therapy.
- Reducing HbA1C cut off to >40 mmol/mol further increases its sensitivity to detect CFRD on OGTT and CF needing insulin therapy. Specificity is reduced.
- Increase in HbA1C by 3mmol/mol in a year correlates with indeterminate and impaired OGTT.

CONCLUSION

- HbA1C is a useful additional tool in screening for CFRD.

REFERENCES