WS23.5 Early recognition of CF related diabetes in children by the use of continuous glucose monitoring systems

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Children with CF may experience an insidious decline in BMI and FEV1 and recurrent chest infections 2–6 years before diagnosis of CF related diabetes (CFRD). Children with CFRD have decreased life expectancy compared with other CF patients.

Objectives: We aimed to assess the value of using a continuous glucose monitoring system (CGMS) (Medtronic I Pro2) for 7 days in our paediatric CF population in a district general hospital, for the earlier recognition and managment of CFRD. Previously we used random blood glucose measurements at all annual reviews and annual oral glucose tolerance tests (OGTT) in patients over the age of 12 yrs.

Methods: Since early 2011, we have offered CGMS to all CF patients over the age of 12 yrs and to any CF patients with concerns about weight, lung function, frequent infections, family history or abnormal blood sugars. Where patients have also had OGTT, these results have been compared to the results of CGMS.

Results: To date, out of a total clinic population of 42 patients, we have completed CGMS in 15 selected patients, aged 3–16 yrs, mean age 11.4 years, and OGTT in 8 of these. 5 had CFRD on CGMS and started on long acting once daily s.c. insulin, with an improvement in symptoms and HBA1C. None of these had previously had an abnormal OGTT. A further 5 had glucose intolerance on CGMS.

These results are consistent with the rising incidence of CFRD reported in 2011 by the paediatric CF clinic in Sydney.

Conclusion: CGMS is a useful tool to screen for glucose intolerance and CFRD in children.

It is superior to the use of annual blood glucose measurements, with annual OGTT in older children, and therefore detects CFRD requiring treatment at an earlier stage.

WS23.6 Assessment of renal function in cystic fibrosis patients by estimated and measured glomerular filtration rate − a cross-sectional study

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Chronic kidney disease (CKD) secondary to cumulative dose of antibiotics [1], cystic fibrosis (CF) related diabetes and immunosuppression post lung transplant is an increasing concern. The prevalence is uncertain, in part due to the cumbersome nature of accurately measuring glomerular filtration rate (mGFR), especially in children. Creatinine based formulas are frequently used (eGFR), but their accuracy in CF is questionable [2]. We present interim data from a cross-sectional study.

Objectives:

1. To establish the prevalence of CKD in CF
2. To test the agreement between mGFR and eGFR

Methods: GFR was measured by Chromium51 EDTA method and estimated by serum creatinine based formulas (Schwartz formula for less than 18 year olds, MDRD formula for adults).

Results: These interim data (n = 50) show mean GFR of 115 ml/min/1.73m^2 (SD 26.3); 6 (12.2%) patients have GFR <90 (CKD stage 2 or worse) and 11 (22%) have GFR >135 (>90thCentile: hyperfiltration [3]). Bland-Altman analysis for agreement of mGFR and eGFR gives a mean bias of −8.7 (indicating that eGFR overestimates mGFR by 8.7 ml/min/1.73m^2) and 95% limits of agreements of +56.4 to −73.8.

Conclusions: Hyperfiltration is a common finding in CF. The eGFR overestimates the GFR with a wide range of error. Prospective studies are needed to evaluate the progression of hyperfiltration and role of antibiotics and other factors in progression to CKD.

Reference(s)

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