Metabolic alkalosis – clinical study of frequency, genotype–phenotype correlation and treatment, on 60 patients from Romania

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Metabolic alkalosis represents a frequent complication in cystic fibrosis (CF), which could become life-threatening.

Aim of study: to establish the frequency of this complication in a group of 60 Romanian patients with CF, to correlate metabolic alkalosis with genotype, to administer the best treatment.

Methods: 60 patients with CF have been followed during 5 years to establish the frequency of metabolic alkalosis (acute or chronic). For each one it was studied the genotype divided in 3 subgroups: delta F508 homozygous, delta F508 heterozygous compound, non delta F508. The treatment followed was: administration of sodium, chloride and potassium for deficit replacement, associated or not with arginine monochloride infusion 10 ml/kg/day, 3 consecutive days (arginine-sorbitol solution 5%).

Results: the frequency of metabolic alkalosis was 30% (18 patients) for the whole group. We didn’t find correlation with genotype, the frequency was: 30.4%, 30.4%, 28.6% for the 3 genotype subgroups. Administration of arginine monochloride improves clinical status and hast the recovery of the biochemical parameters.

Conclusions: the frequency of metabolic alkalosis is 30% among patients with CF, indifferently if the patient is homozygous delta F508, heterozygous delta F508, or non delta F508. Association in the treatment of arginine monochloride improves the evolution and it is mandatory in patients with severe degrees of alkalosis. Two patients (5 years, 8 years old) with “IVS8-7T splice variant” had as the unique clinical manifestation of CF, episodes of severe dehydration and metabolic acute alkalosis.

Audit to identify the communication process of a diabetic oral glucose tolerance test (OGTT) result to the patient before and after the introduction of standards

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Introduction: Screening to identify CFRD early is important to prevent decline prior to diagnosis. When screening is performed, it is important patients are informed promptly of the result and appropriate action is taken. We audited the communication of Diabetic OGTT results to patients prior to and following the introduction of standards stating that the CF Nurse specialist (CFNS) would co-ordinate and document feedback to patients within 4 weeks of the OGTT.

Aim: To assess if the introduction of standards improved the communication of results to patients.


– Length of time before patients were informed of the result
– How patients were informed
– Who informed patients

Results: 12 patients had a diabetic OGTT in 2005 and 7 in 2007. In 2005 the length of time before patients were informed varied \(-1\) month \(-9\) patients, \(-1\)–\(-3\) months \(-2\) patients, \(-3\) months \(-1\) patient. In 2007 all patients were informed within 4 weeks.

Conclusion: The first audit highlighted that no member of the CF team was invited to co-ordinate the feedback of OGTT results. Poor communication of the OGTT results within the CF team can lead to delayed feedback to patients. Following the introduction of standards the second audit showed that the CFNS now documents and informs all patients within 4 weeks, therefore meeting the standards set.

Table 1: How patients were informed

<table>
<thead>
<tr>
<th>Date</th>
<th>Number of patients</th>
<th>Who informed by</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>2</td>
<td>Diabetologist – Ward</td>
</tr>
<tr>
<td>2005</td>
<td>6</td>
<td>CF Doctors – Ward</td>
</tr>
<tr>
<td>2005</td>
<td>4</td>
<td>Diabetologist – CFRD Clinic</td>
</tr>
<tr>
<td>2007</td>
<td>7</td>
<td>CFNS</td>
</tr>
</tbody>
</table>

Is it necessary for all adult cystic fibrosis patients to have an annual oral glucose tolerance test (OGTT)?

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Introduction: Current UK guidelines recommend the use of an annual OGTT in adult patients. Yung et al 19991 devised guidelines to determine which patients should have an OGTT, and these have since been used in our unit. All patients are invited for annual review (AR). They are screened at AR and more frequently if clinically indicated. The decision for OGTT is based on random blood glucose (RBG) \(>11\) mmol/l; glycosylated haemoglobin (HbA1C) \(>6.1\%\), or clinical symptoms (polydipsia, polyuria, nocturia, unexplained weight loss). If one or more of these criteria are met, then an OGTT is performed.

Aim: To assess the validity of this selective approach.

Method: Patients with diabetes diagnosed from 2002 until 2006 were identified from the departmental CF database. Patient demographics, place of diagnosis, reason for OGTT, and blood results were recorded.

Results: 41 new diabetic patients (16F, 25M) were diagnosed at RBH between 2002 to 2006. 29 (70%) of whom had attended for AR. Of these 29, all met the above criteria. 16 (55%) had isolated HbA1C\(>6.1\) mmol/l; 2 (7%) had isolated RBG\(>11\); 6 (21%) had HbA1C\(>6.1\) mmol/l and RBG \(>11\); 4 (14%) had HbA1C\(>6.1\) and clinical symptoms; and 1 (3%) had clinical symptoms only; 26 patients had subsequent OGTT and 3 had capillary blood glucose monitoring (2 as inpatient and 1 at home) for clinical and geographical reasons.

Conclusion: Using our selective approach over 5 years we did not miss the diagnosis of diabetes in any patient. This approach is more time and cost effective than routine annual OGTT.

Reference(s)


Communication processes and outcome following an impaired glucose tolerance test: findings from a clinical audit

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Introduction: Management of patients with an impaired glucose tolerance (IGT) test result can be difficult. The Oral glucose tolerance test (OGTT) should be repeated in one years time or home blood glucose monitoring (HBGM) commenced for those patients identified as showing signs of unexplained clinical deterioration. However, this is an informal process. We audited the communication and documentation of an IGT result to patients and the outcome following this.

Aim: To determine if patients with an IGT result in 2005 were informed of the result and outcome of this.

Method: Retrospective review of medical, diabetic nursing and dietetic notes to:
– Identify patients with IGT and if they were informed of this.
– If HBGM was commenced and if so why.
– Outcome.

Results: 19 patients were identified. 14 of the 19 were informed, of these, 8 commenced HBGM. Poor documentation and communication within medical notes and between multidisciplinary team members made it difficult to identify the clinical reasons why HBGM was commenced.

Following monitoring, 4 patients required no intervention, 1 was advised to make dietary changes, 1 commenced oral hypoglycaemic agents and 2 commenced insulin.

Conclusion: Given that some of the patients commenced treatment, the possibility is raised that certain people requiring treatment are missed. The audit identified the need for:
– Standards and a pathway to ensure that all patients are informed of the result.
– A member of the team to co-ordinate feedback of results to patients.
– A risk assessment tool to help identify clinical markers for the early detection of Cystic Fibrosis Related Diabetes.