

Usefulness of glycosylated haemoglobin (HbA1c) to screen for diabetes in patients with schizophrenia

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Dear Editor,

Metabolic abnormalities have consistently been identified as a part of schizophrenic illness. The interest in this topic has recently been renewed since the introduction of second generation antipsychotics (SGA) and their possible association with metabolic abnormalities (ADA, 2004; De Nayer et al., 2005; Newcomer, 2005; Scheen and De Hert, 2005).

Generally, assessment of fasting glucose is recommended as screening and monitoring for diabetes (ADA/APA consensus, 2004) although an Oral Glucose Tolerance Test (OGTT) remains the gold standard (Expert Committee on the Diagnosis and Classification of Diabetes Mellitus, 2003). HbA1c is accepted as a useful index of mean blood glucose levels in the treatment of patients with diabetes but was not selected by the expert committee as a means for screening (Expert committee on the Diagnosis and Classification of Diabetes Mellitus, 2003; Kilpatrick et al., 1998; Mulkerin et al., 1992; Rohlfmg et al., 2000).

Since HbA1c testing can be performed at any time of day without special patient preparation it could be a more convenient screening method for both patients and caregivers. A recent consensus on the management of diabetes risk in schizophrenia of British psychiatrists suggests that assessment of HbA1c can be used for screening (Expert Group, 2004).

We evaluated whether assessment of HbA1c is useful to screen for the presence of glucose abnormalities or diabetes in patients with schizophrenia in a large dataset of our prospective metabolic study. The study was approved by an ethical committee and all patients gave written informed consent.

All consecutive patients with a DSM-IV diagnosis of schizophrenia or schizoaffective disorders (19.9%) ($N = 388$), both out- (31.7%) or inpatients, were asked to participate in an extensive screening and prospective follow-up study of metabolic parameters. For all 378 (excluding patients being treated for diabetes, $77 = 10$), an OGTT, with assessment of HbA1c on the same day (HPLC Menarini HA-8160), was performed at baseline.

All patients were treated with the same antipsychotic medication for at least 6 months. The majority of patients were treated with SGA (88.9%).

For the diagnosis of diabetes and pre diabetic abnormalities we used the criteria of The American Diabetes Association (Impaired fasting glucose (IFG), fasting glucose ≥ 100 mg/dl; Impaired Glucose Tolerance (IGT), glucose ≥ 140 mg/dl at 2 h in the OGTT; diabetes, fasting glucose ≥ 126 mg/dl or glucose ≥ 200 mg/dl at 2 h in the OGTT) (Expert Committee, 1997, 2003).

Based on the results of the OGTT three patient groups were identified: a) patients meeting criteria for diabetes (10 known and treated diabetes, 22 newly detected cases); b) patients with either IFG, IGT or both; c) patients without glucose abnormalities. In all patients with newly detected diabetes and glucose abnormalities the assessment of HbA1c was on the same day as the OGTT.

According to ADA criteria 8.3% (32) of patients met criteria for diabetes, another 24.2% (95) met criteria for pre-diabetes (17.8% IFG, 12.6% IGT, either isolated or in combination).

HbA1c differs significantly between groups ($p < .0001$, all pair wise comparisons $p < .01$) (Table 1). Within each patient group large inter-individual differences in HbA1c values were however observed. The HbA1c values also differ significantly between patients being treated for diabetes ($8.5 \pm 2.0\%$) and patients with newly detected diabetes ($6.8 \pm 1.4\%$) ($p < .01$). With a cut-off value of 6.3% (normal threshold reference) the specificity of predicting diabetes (91.9), recent onset diabetes (91.9) or glucose abnormalities (95.5) was high (Table 1). But the sensitivity is only moderate for the prediction of diabetes (68.8, missing 1 out of 3 cases, all cases missed are new onset cases), poor for the prediction of new onset diabetes (54.5, nearly missing 1 out of 2 cases) or glucose abnormalities (IFG/IGT) (18.9%).

Relying only on measurements of HbA1c provides limited predictive value to detect glucose abnormalities and or recent onset diabetes. Screening for glucose abnormalities should be at least by assessment of fasting glucose.

Our results confirm results obtained in normal populations showing that HbA1c cannot be used to screen for or detect recent onset diabetes in schizophrenic patients (Kilpatrick et al., 1998; Mulkerin et al., 1992; Rohlfing et al., 2000). Measuring of HbA1c is only recommended for the follow-up of treatment of patients suffering from diabetes (Expert Committee on the Diagnosis and Classification of Diabetes Mellitus, 2003).

Table 1 HbA1c values in function of glucose abnormalities

Patient group	HbA1c (%)			
	Mean	STD	Min	Max
Diabetes	7.3	1.8	4	12
IFG/IGT/both	5.6	0.7	3.8	8.8
Normal	5.3	0.5	3.4	7.3

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