Study of behavioral and psychological disturbance in preschool, school aged, and adolescent type 1 diabetic patients

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بسم الله الرحمن الرحيم

وقُلِ اعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ
ورَسُولُهُ والْمُؤْمِنُونَ

صدق الله العظيم

سورة التوبة آية (105)

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Marwa Mohammed Samy Ahmed

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Study of behavioral and psychological disturbances in preschool, school aged, and adolescent type 1 diabetic patients

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Objectives: to study the behavioral and the psychological disturbances in preschool, school aged, and adolescent type 1 diabetic patients and its relation to glycemic control and microvascular complications. **Methods**: A cross sectional case- control study was conducted on 60 children, and adolescents with type 1 diabetes mellitus. They were recruited from Diabetes Clinic, Children Hospital, Ain Shams University, Cairo, Egypt during the period from January 2011 to January 2013: 20 preschool aged 3 to 6 years, 10 females and 10 males, 20 school aged; 7 to 12 years, 12 females and 8 males, and 20 adolescents aged 13 to 18 years, 13 females and 7 males. Control group included 60 healthy subjects with comparable age and sex, 29 females and 31 males, subdivided into three similar groups. All patients were subjected to clinical assessment and glucose monitoring, mean glycated hemoglobin, and urinary microalbumin, behavioral and psychological assessment using a questionnaire: Pediatric behavior rating scale; appropriate for use in children and adolescents aged 3 to 18 years. **Results:** revealed that all patients had behavioral disturbances namely atypical behavior (P=0.0001), irritability (P=0.0001), grandiosity (P=0.0001), aggressive behavior (P=0 .003), affect disorder (P=0.0001), disturbed social interaction (P=0.0001) when compared to controls. Atypical behavior (P=0.003), irritability (P=0.0001), affect disorder (P=0.003) were significantly increased in school aged patients compared to controls while in adolescent patients irritability (P=0.023) was significantly increased. Hyperactivity was increased in school aged diabetic children compared to diabetic preschool children and adolescents (P=0.037). Disturbed social interaction was clinically evident in optimally controlled diabetic patients when compared to suboptimally controlled patients (P=0.009). **Conclusions:** behavioral and psychological problems are common in type 1 diabetes in different age groups and may influence their glycemic control and compliance to treatment suggesting the potential value of interventions that address child behavior.

List of Abbreviations

A1c	: Glycated hemoglobin
ACE	: Angiotensin converting enzyme
ADA	: American diabetes association
AER	: Albumin excretion rate
ADHD	: Attention deficit hyperactive disorder
AN	: Anorexia nervosa
BADDS	: Brown Attention Deficit Disorder Scale
BG	: Blood glucose
BMI	: Body mass index
BP	: Blood pressure
CGMS	: Continous glucose monitoring system
CNS	: Central nervous system
CPT	:Continuous Performance Test
CSII	: Continous subcutaneous insulin infusion
CT	: Computed tomograghy
DKA	: Diabetic ketoacidosis
DM	: Diabetes mellitus
DN	: Diabetic nephropathy
DOC	: Drug of choice.
DSM IV	: Diagnostic and Statistic Manual of Mental Disorders . fourth edition
EEG	: Electroencephalography
ER	: Emergency room
ESRD	: End stage renal disease
FDA	: Food and drug administration
GAD	: Generalized anxiety disorder
GAD_{65}	: Glutamic acid decarboxylase
GDM	: Gestational diabetes mellitus
Hb	: Hemoglobin
HbA1c	: Glycated hemoglobin
HIV	: Human immunodeficiency virus
HPLC	: High performance liquid chromatography
IFG	: Impaired fasting glucose

List of Abbreviations (Cont.)

ISPAD	: International Society for Pediatric and Adolescent Diabetes.
IV	: Intravenous
IVA	: Integrated Visual and Auditory
MDD	: Major depressive disorder
MDI	: Multiple daily injection
MODY	: Maturity onset diabetes of the young
MRI	: Magnetic resonance imaging
NPH	: Neutral protamine hagedorn
OGTT	: Oral glucose tolerance test
PBRS	: Pediatric behavior rating scale
PDD	: Pervasive developmental disorder
PET	: Positron emission tomography
RBP	: Retinol binding protein
SC	: Subcutaneous
SMBG	: Self monitoring blood glucose
SNRI	: Selective norepinephrine reuptake inhibitor
SSRI	: Selective serotonin reuptake inhibitor
T1DM	: Type 1 diabetes mellitus
TCA	: Tricyclic antidepressant
VDRL	: Venereal Disease Research Laboratory
WHO	: World health organization

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Introduction

Diabetes mellitus is a group of metabolic diseases characterized by chronic hyperglycemia resulting from defects in insulin secretion, insulin action, or both.The abnormalities in carbohydrate, fat, and protein metabolism that are found in diabetes are due to deficient action of insulin on target tissues. If ketones are present in blood or urine, treatment is urgent, because ketoacidosis can evolve rapidly.Diabetes in children usually presents with characteristic symptoms such as polyuria, polydipsia, blurring of vision, and weight loss, in association with glycosuria and ketonuria. In its most severe form, ketoacidosis or rarely a non-ketotic hyperosmolar state may develop and lead to stupor, coma and in absence of effective treatment, death ***(Craig et al., 2009).***

Diabetes impacts the life style, personality and overall emotional and physical well-being of the child. A diagnosis of diabetes can contribute to emotional disturbances both in the child and in the family ***(Kovacs et al., 1985).***

Adults and children who cope well with diabetes seem to find a balance as they fit diabetes care into their daily living, rather than forcing life to revolve around the diabetes regimen ***(Arslanian et al., 1994).***

Rigorous selfcare is very difficult for diabetic patients at any age, and it is particularly challenging for children and adolescents who want a carefree lifestyle like their peers. In addition to the everyday constraints imposed by treatment, these patients are exposed to acute metabolic crises and occasional hospitalizations ***(Weissberg-Benchall et al., 1995).***

Usually, type 1 diabetic children and adolescents cannot completely follow their self-care regimen because they are unable to resist peer pressure and cannot coordinate the demands of their social environment (school, family

recreational activities, and employment) with those of the treatment ***(Johnson, 1980).***

Because of these factors, it has been proposed that children with diabetes are more vulnerable to psychological problems ***(Hauser, 1979).***

It is clear that diabetes is a significant burden to the family and child, important associations have been reported between maternal and child psychopathology ***(Hatton et al., 1995)*** and between maternal and child depression ***(Mullins et al., 1995).***

Aim of The Work

To study the behavioral and the psychological disturbance in preschool, school aged, and adolescent type 1 diabetic patients and its relation to glycemic control and microvascular complications.