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Original Research Article

TO FIND THE ASSOCIATION OF INHERITANCE FOR PATERNAL OR MATERNAL OR BOTH SIDES IN TYPE 2DM PATIENTS

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Abstract

Background & Methods: The aim of the stud is to find the association of inheritance for paternal or maternal or both sides in type 2DM patients, all patients with emphasis on duration of diabetes mellitus, symptomatology of diabetes mellitus and its various microangiopathic complications, interviewed for family history and age of onset of the disease.

Results: In the study population, more number of patients 28(56 %) were having diabetes equal to or less than 5 years, followed by 12 patients (24%) with the duration of 6 to 10 years, next 06 patients (12%) between 11 to 15 years and only 03 patients (6%) between 16 to 20 year, one patient were having type 2 DM from more than 20 years. 24 % Patient were alcoholic and 26%, patients were smoker and 22% were tobacco chewer.

Conclusion: In our study population, 24 % Patients were alcoholic, 27% were smoker and 22% tobacco chewer. The development of early-onset type 2DM was more likely associated with a consanguineous and/or conjugal diabetic parents and probably MODY subtype among a substantial number of patients. Epidemiological and demographic factors might have been implicated, especially in those with negative parental diabetic history.

Keywords: inheritance, paternal, maternal & Diabetes Mellitus.
Study Design: Observational Study.

1. Introduction

Diabetes mellitus is a disease that was recognized in antiquity, but its history has been characterized by numerous cycles of discovery, neglect and rediscovery. Its history may be divided into four major periods that reflect different phases in the understanding and management of the disease[1].

The ‘Ancient’ period witnessed the first clinical descriptions of diabetes and complications[2]. The 16th to 18th centuries have been termed the ‘Diagnostic’ period, as diabetes mellitus was then identified as a separate disease entity, while the mid to late 19th century may be regarded as the first ‘Experimental period, during which the glucoregulatory role of the pancreas became clear and the biochemical disturbances of diabetes were initially

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characterized. Finally, the 20th century has seen a dramatic increase in knowledge about diabetes[3].

Insulin resistance and abnormal insulin secretion are central to the development of type 2 DM. Although the primary defect is controversial, most studies support the view that insulin resistance precedes an insulin secretary defect but that diabetes develops only when insulin secretion becomes inadequate[4]. Type 2 DM likely encompasses a range of disorders with common phenotype of hyperglycemia. Most of our current understanding (and the discussion below) of the pathophysiology and genetics is based on studies of individuals of European descent. It is becoming increasing apparent that DM in other ethnic groups has a different, but yet undefined, pathophysiology. In these groups, DM that is ketosis prone (often obese) or ketosis-resistant (often lean) is commonly seen[5-7].

2. Material and Methods

All the patients attending to Tertiary Care Centre, M.P. and were screened for eligibility on 200 patients. The eligible patients were administered an informed consent. A detailed history was elicited from all patients with emphasis on duration of diabetes mellitus, symptomatology of diabetes mellitus and its various microangiopathic complications, interviewed for family history and age of onset of the disease, in addition to the study of medical records of the patients. The consented participants were enrolled in the present study. Descriptive data of the participants were obtained by interviewing the patients. Each of the patient's proper history was recorded on predesigned and pretested Proforma. They underwent thorough physical examination.

Inclusion Criteria

- Patients having history of type 2 diabetes mellitus.

Exclusion Criteria

- Patients having history of type 1 DM.
- Patients having history of Gestational DM and other type of DM.

3. Result

Table 1: Distribution of Patients of type 2 DM

Age	Male	Female	Total	Percentage
30-40	02	02	04	8%
41-50	04	06	10	20%
51-60	08	11	19	38 %
61-70	05	06	11	22%
71-80	03	03	06	12%
Total	**22**	**28**	**50**	**100%**

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04 patients (8%) in the study were in the age group of 30 – 40 years. Of these 02 were males and 02 were females. 10 patients (20%) were in the age group of 41 – 50 years. Of these 04 were males and 06 were females. 19 patients (38%) in the study were in the 51 – 60 age group, of these 08 were males and 11 were females. 11 patients (22%) were in the age group of 61 – 70 years, of these 05 were males and 06 was female. 06 patients (12%) in the study were in the age group of 71 – 80 years. Of these 03 were males and 03 were female. Most patients were between the age group of 51-60 years (38 %). Mean age 57 years, Median age are 56 years and Range 35 years to 80 yrs.

Table 2: Duration of Type 2 DM

Duration of Type 2 DM	**No.**	**Percentage (%)**
0-5 years	28	56%
6-10 years	12	24%
11-15 years	06	12%
16-20 years	03	6%
More than 20 years	01	2%
	50	100

In the study population, more number of patients 28(56 %) were having diabetes equal to or less than 5 years, followed by 12 patients (24%) with the duration of 6 to 10 years, next 06 patients (12%) between 11 to 15 years and only 03 patients (6%) between 16 to 20 year, one patient were having type 2 DM from more than 20 years.

Table 3: Personal History of type2 DM

Personal History	**Number of patient**	**Percentage (%)**
Alcohol only	03	06
tobacco Only	11	22
smoking Only	13	26
Alcohol+ tobacco	01	02
Alcohol+ smoking	04	08
Alcohol+ smoking$_{+}$ tobacco	03	06
Tobacco+ smoking	05	10
Total alcoholic	12	24
Total smoker	13	26
Total tobacco chewer	11	22

24 % Patient were alcoholic and 26%, patients were smoker and 22% were tobacco chewer.

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4. Discussion

Prevalence among men and women in most populations, with some evidence of male preponderance in early middle age, Most of the study participants were middle aged men and women which is in concordance with other studies[8]. Women were more likely to have a higher BMI and this association was statistically significant ($P < 0.001$).

A population based study found that men are at greater risk of developing type 2 diabetes at a lower BMI than women. Maternal history of diabetes was more than paternal history (65.5% vs 57.5%) but was not significant, excess maternal transmission. But maternal history of type 2 DM is seen to be a risk factor for type 2 DM in the siblings of our study participants ($P< 0.001$). Siblings of probands with affected mothers had a greater prevalence of diabetes (20%) than those with affected fathers, having a paternal history of type 2 DM was noted to be more of a risk for a female patient as compared to a maternal history[9]. Likewise men had a higher risk with a maternal history of DM. The occurrence of type 2 DM among same gender siblings was more common. However these associations were statistically not significant.

Gestational Diabetes mellitus (GDM) is a transitory form of diabetes which manifests as hyperglycemia during pregnancy which is clearly not overt diabetes and resolves itself post-partum. An estimated sibling risk ratio of 1.75 was reported for GDM; however, changes in the diagnostic criteria have complicated retrospective identification of GDM cases and correct estimation of heritability[10]. It has been observed that many of the GDM-associated variants overlap with T2D risk variants which may partly explain the increased risk for T2D in women with previous GDM. Despite being a transient condition, women with GDM are at increased risk for adverse pregnancy outcomes and fetal hyperinsulinism, and infants with macrosomia.

Type 2diabetes is the most prevailing form, constituting 80%–90% of all reported diabetes cases. T2D is the result of a complex interplay between genetic, epigenetic and environmental factors. T2D develops when pancreatic beta cells can no longer produce enough insulin to compensate for the insulin resistance imposed by increasing obesity[11]. There is no formal definition of T2D; patients who do not fulfil criteria of T1D, LADA, secondary diabetes, or monogenic forms of diabetes are considered to have T2D. T2D is more often associated with increased age, wherein age of onset is usually over 35 years. However, it is increasingly reported in adolescents in high risk countries such as India AND China. Heritability of T2D is discussed below. Finally, diabetes can develop secondary to pancreatic disease or other endocrine disorders and referred to as secondary diabetes.

5. Conclusion

In our study population, 24 % Patients were alcoholic, 27% were smoker and 22% tobacco chewer. The development of early-onset type 2DM was more likely associated with a consanguineous and/or conjugal diabetic parents and probably MODY subtype among a substantial number of patients. Epidemiological and demographic factors might have been implicated, especially in those with negative parental diabetic history.

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