

Patients with Diabetes Mellitus and their Management – A Local Scenario

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Objective: The prevalence of diabetes is dangerously increasing esp. in this part of the world. The study is done to analyze the disease in both genders, the average age of onset of disease, the treatment which the patients are getting esp. by their family physicians and their control based upon their average random blood sugars.

Material and Methods: Case series observational study was done selecting 200 patients with Type 2 Diabetes of at least one year duration, from ages 20 yrs and above. 2 centers were included in the study one at the heart of Lahore and other at peripheral district Sheikhpura. The patients which were selected were being treated by family physicians and were not consulting any specialist for the control of their disease. First 200 patients were selected 100 at each centre irrespective of their ages gender and duration of disease.

Results: The gender ratio was 38 and 62 % for Males and Females respectively. The average age of onset was 40 years. On the average 26% patients were on insulin and 74% were on oral anti Diabetic medicine. The glucose control was better in patients on insulin as compared to those on oral medication. Overall 14% were controlled in our study, even when controlled BSR was taken as 200 mg%.

Conclusion: There are significantly more females diabetic as compared to males in our study, the overall control was disappointing, however 26% of patients were on insulin and their average blood sugar random was better than others. More large observational studies are required to get to more reliable picture, Customized local guide lines needs to be developed for our family physicians, they should be included in the team for developing the guidelines, as they see majority of the patients with Type 2 Diabetes Mellitus.

Introduction

Diabetes is now an endemic. The prevalence for all age group world wide is estimated to be 2.8% in year 2000 and 4.4% in 2030 the total number of people with Diabetes is projected to rise from 171 million in 2000 to 366 million in 2030.¹ The prevalence of Diabetes has risen more rapidly in south Asia than in any other part of the world.² Its prevalence in Pakistan in the age group 20 – 79 years is 6.2 million³ i.e. more than 10% of population. A Study in India by Ramachandran reported that diabetes is more prevalent in higher socio economic class while diabetic complication is prevalent in lower socio economic class.⁴ When lower socio economic class is affected the choice between the health care expense and food or clothing can lead to a downward spiral of worsening of poverty and health.⁵ The main complications of DM are micro and macro vascular. A lot of trails are available like DCCT, EDIC, UKPDS, Kumamoto. UKPDS Legacy all shows a large authentic data that complications can be prevented or / and delayed by good control.⁶⁻⁸ All the authentic guidelines like American College of Endocrine, ADA, WHO, IDF reviewed tight control according to BSF, BSR and HBA1C.⁹⁻¹¹

Considering the poor or developing countries like us, it becomes more difficult for patients to assess the tertiary care centre. It is also impossible by a tertiary care center to address and control diabetes of all patients esp. in countries like Pakistan.

In a setup of third – world primary care centers HBA1c

may not be available to every patient as most of the authorities rely on HBA1c to measure the control and complication of DM of diabetes.^{11,12} SMBG and a random blood sugar level may have lesser value in tablet controlled T₂ DM.¹³ However in insulin controlled T₂ DM and also in the early disease SMBG has a significant value.¹⁴ There are different guidelines and algorithms that when and how to shift the patient on next step of treatment along with other treatment recommendations. A note worthy algorithm in this regard is IDC. (International Diabetes Centre).

However, we used the blood sugar level as permitted by our resources to get an approximate idea of the glucose control in our patients. The random sugar levels were measured in the centers. It also gave us an idea whether the patients were shifted from one modality of treatment to another in accordance with the international guidelines.

Defining high risk patients their screening and prevention of DM¹⁵⁻¹⁷ is extremely important in poor countries like Pakistan there is a dire need to spread the information and awareness of preventing DM to both Family physicians and general public esp. to the high risk patients. There are quite a few societies and associations who are working on this disease and there is a need to make census about screening guide line.

Method and Results

A case series observational prospective study was done on T₂ diabetic patients, the first 200 patients were selected with

known duration of disease at least one year and ages from 20 years and above.

We studied patients at Shalimar Hospital, Lahore and at Sheikhpura, a district around 54km from Lahore, 100 patients each at both places. We grouped the duration in 1 – 3 years, 4 – 7 years, 8 – 10 years and more than 10 years. We compared the age at the onset of disease (duration as the patient knows), in both male and female, duration of disease, the random blood sugar levels at their first visits and the medication they were taking.

The patients were analyzed according to their gender, duration of disease, blood sugar random levels at their first visits done in the clinic, number of medications they are taking and their controlled status.

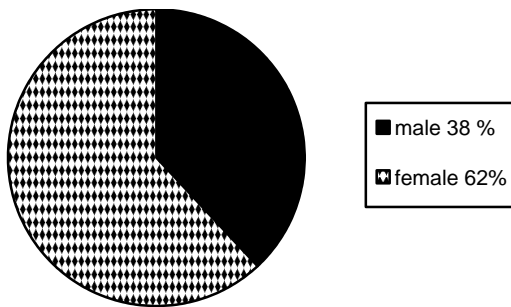
Duration of disease was divided into 4 categories:

- a) 1 – 3 years.
- b) 4 – 7 years.
- c) 8 – 10 years.
- d) More than 10 years

The patient medications were divided in five classes. Those who are taking single OAD, two OAD, three OAD, insulin alone and insulin + OAD.

The age of onset of diabetes distribution in males and females, controlled and uncontrolled were analyzed. The results were shown in pie charts and bar charts.

The first pie chart represents the percentage of diabetes in males and females with the former being 38% and the latter 68%.



GENDER RATIO
Male 38% Female 62%

Fig. 1: Average Age of Onset of DM in Males and Females.

It is noted as shown in this graph the age of onset of diabetes in both genders which is almost equal with females getting the disease slightly earlier.

There are lot of young patients as well as increasing number of old age patients discovered type 2 diabetes for the first time. In our study the average age of disease is 40.5 years.

Average Overall BSR in Males and Females

The blood sugar level of both males and females is equally uncontrolled with men doing just slightly better than

women. May it be attributed to the patients themselves or to their doctor.



Fig. 2:

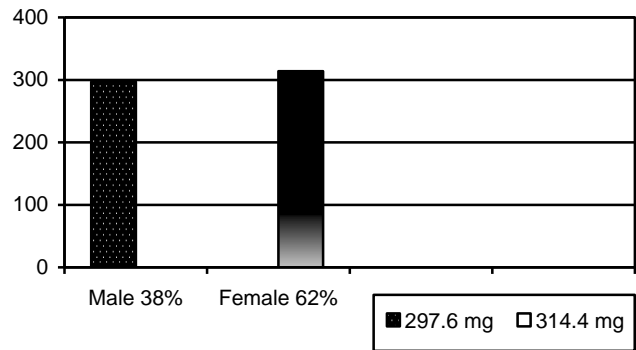


Fig. 3:

Almost 0.5% HBA1C difference in both gender may be reflective of either difficulty controlling BSR due to many factors like more resistant disease or compliance problem or lack of general physical activity adding weight, as compared to men or less frequent visits to their doctors .All or a few of these factors may be operative in less well control of disease in Females.

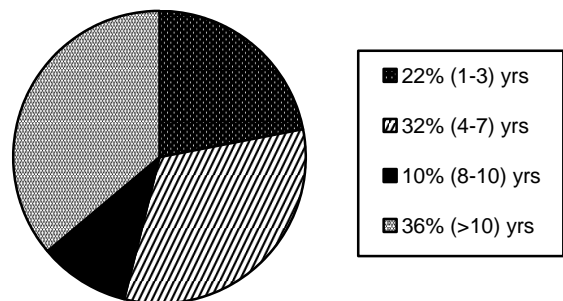


Fig. 4:

Percentage Duration of Disease

We classify our sample of the patients according to their duration of disease and found that maximum number of patients' i.e. 36% who were visiting the clinics were those with duration of disease greater than 10 years probably

because diabetes may be becoming more symptomatic or causing complications. However, its good to see a significant number i.e. 22% of the patients in this study group has early disease and are also showing up at clinics which reflects increasing awareness about the disease.

Average BSR in Different Duration of Disease

As with the overall blood sugar control levels, the control of blood glucose in different duration groups is also very disappointing and high above the desired levels. The average Blood sugar levels in earliest i.e. 1 – 3 years and those with 10 yrs or more are better controlled than the other 2 groups. In the group of 1 – 3 years duration the lesser BSR levels could be due to better compliance and we know that earlier in the disease the b cells reserve is better.

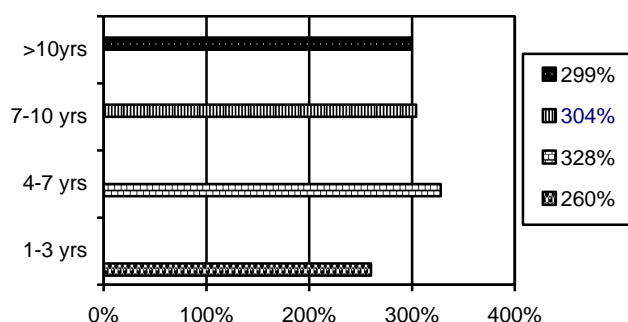


Fig. 5:

Percentage of Patients on Different Medications

Interesting to note that taken as a whole, 26% of the patients is on insulin whether alone or in combination, controlled or otherwise, these may need dose adjustments. Nevertheless it can also be seen that the least number of patients are on 3 OAD.

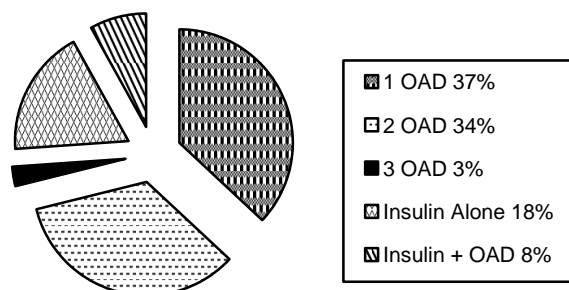


Fig. 6:

Average BSR in Patients on Insulin Vs OAD

Significant difference i.e. around 60 mg% less on average blood sugar level regardless the gender or duration of disease noted in the insulin group as compared to the OAD group.

Controlled Vs Uncontrolled Patients

(Controlled Levels taken as BSR = 200 mg %)

We categorized 200 mg % blood glucose level as controlled which is a high value when compared with the international guidelines. Even then the results were not satisfactory with 86% uncontrolled.

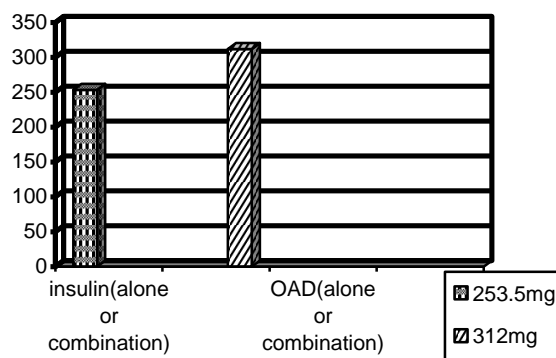


Fig. 7:

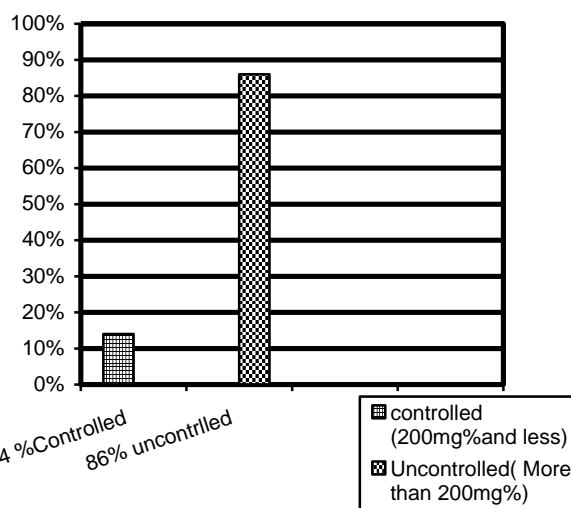


Fig. 8:

Discussion

It is a well known fact to all of us that diabetes is a life long disease and the objective to treat is its good control. All the doctors and a few literate patients also know the reason why we need to have a good control i.e. to prevent or at least delay the complications.⁷ The financial burden of the disease is enormous and it is multiplied many times once any of the complication occurs which is then translated into individual and national loss.¹⁸ Globally the direct health care cost of Diabetes for people in 20 – 79 age group is estimated to be at least \$ 153 billion annually.¹⁹

SMBG is a good perimeter to monitor glucose and also recommended world wide along with the HBA1C. However the frequency of monitoring frequency in T₂ DM is deba-

table and a few controversies have also being reported in the Literature.¹³⁻¹⁴

There could be many reasons for the difference in gender distribution. Contrary to general perception pregnancy and high parity is not considered as risk of developing diabetes mellitus.²⁰⁻²¹ In our societies most of the women are house wives and have sedentary lives they are not enough educated about the disease and because of their sedentary habits they are more vulnerable to gain weight and taking it together it is a sensible to presume their increase risk of getting the disease.²² The culture also does not encourage the women to participate in physical activities compounding the problem.

We also observed that there is a population which develops disease at an older age so it is problem of aging population as well²³ so because of more aging population getting the disease it has brought the average age again up to 40, in spite of the fact that lesser age groups are also being affected more and more by diabetes. In the primary care set up majority of the patients takes OAD²³ so is the case in our study the bulk of the patients i.e. 74% are on OAD whether single, double or triple.²³

In the group of 1 – 3 years duration the lesser BSR levels could be due to better compliance because we know that earlier in the disease the b cells reserve is better.²⁴

A good effort put in by the family physicians to put 26% of patient on Insulin and the outcome is very obvious. Even if in the first look the graph looks disappointing that patients who were on insulin has a poor control i.e. average 253 mg %. However the brighter side of the graph is that, considering the fact these are patients treated by family physicians rather than in some specialized Diabetic centre, a significant number were on insulin and comparing it with non insulin treated patients we can see that if this average BSR is translated into HBA1C theoretically it comes to about 2% less HBA1C in Insulin patients may translate into the fact that 1% reduction in A1C could possibly reduce 14–43% complication rate.⁶⁻⁸

There are studies to show the inertia in clinical practice to shift the pt onto the next step and insulin.²⁵ The compliance factor is another big problem in every setup and with most of patients. However when we look at our results we need to do something to train our physicians and also our patients regarding DM control. We think the knowledge of complications their irreversibility and the relation of complication and tight control is very much lacking in our society.

The other issue is after diagnosing DM. Local and customized simple guide line should be made available to every practicing physician esp. to those working in the peripheries esp. consideration should be given in the guidelines as when to refer the pt to secondary or tertiary care unit.

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