

Achieving Target of Treatment of Hypertension and Dyslipidemia in type 2 Diabetic Patients

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Abstract

Background: Dyslipidemia and hypertension in patients with diabetes increase the risk of macro and microvascular complications.

Objectives: To screen the degree of achievement of control of blood pressure, serum cholesterol and serum triglycerides in type 2 diabetic patients.

Subject and methods: Two hundred patients with type 2 diabetes were enrolled in this study. The systolic, diastolic blood pressure, total serum cholesterol and serum triglycerides were measured in all patients in the study group.

Results: One sixty nine patients (84.5) % had uncontrolled blood pressure and 127(63.5%) of patients had dyslipidemia, while only 9 patients (4.5) % achieved the target for the blood pressure and the total serum cholesterol and triglycerides.

Conclusions: Blood pressure and fasting lipid levels should be measured at the time of diagnosis of diabetes and then frequently as clinically indicated and more frequent testing should be performed if treatment for hypertension and dyslipidaemia is initiated.

Key words: Diabetes mellitus-Blood pressure, Total serum cholesterol –Serum triglyceride.

Introduction:

The achievement of quality of care constitutes a priority for modern health care system. According to a recent analysis of the national health and nutrition examination survey data the prevalence of hypertension among US adults with diabetes mellitus is 77 %. The UK prospective diabetes study 2 and the hypertension optimal treatment study 3 both demonstrated an improved outcome especially in preventing stroke in patients assigned to lower blood pressure target.

When the two diseases (hypertension and diabetes) coexist, the rate of cardiovascular - renal complication is increased more or equal 2 folds over all, and many folds for progressive nephropathy, although in the majority of reports being treated for hypertension, blood pressure is controlled only in 30% of hypertensive diabetic patients¹.

Diabetes in adults is associated with high risk of vascular disease (2-4 folds greater than that of individual without diabetes) with cardiovascular disease is being the primary cause of death among people with type 1 and type 2 diabetes². The diabetes aggressive treatment of all cardiovascular risk factors including dyslipidaemia is very necessary³. Chronic hyperglycemia promotes the glycation of LDL-C and both these process are believed to increase the atherogenicity of LDL-C⁴.

The burden of dyslipidaemia is high in patients with type 2 diabetes, the national cross – sectional chart audit study of 2473 Canadian patients with type 2 diabetes revealed that 55% of patients with diagnosis of diabetes of equal or less than 2 years had dyslipidaemia, this proportion rose to 66% in patients with diabetes for equal or more than 15 years⁵.

The aim of present study is to screen the relevant state of blood pressure, serum cholesterol and serum triglycerides in type 2 diabetic patients.

Patients and methods:

A cross sectional study was done in the National Center for Treatment and Research of Diabetes / AL- Mustansirya University during the period from 5th of April 2011 to the end of May 2011.

Convenient sample was used by enrolling 200 patients with type 2 diabetes who were diagnosed previously as type 2 diabetic patients.

The patients were treated either by oral hypoglycemic agents, insulin or diet alone.

Each patient enrolled in the study was interviewed directly and separately taking the history of the disease and each patient was asked about age, sex, age of onset and duration of diabetes, type of treatment, history of hypertension, history of dyslipidemia and use of antihypertensive treatment or lipid lowering agent, therefore the following measurement and investigations were done for each patient included in this study group, blood pressure (systolic and diastolic) serum triglycerides and total serum cholesterol. The definition of hypertension in adults aged 18 year or older is systolic blood pressure ≥ 140 mmHg and the diastolic blood pressure ≥ 90 mmHg, and the dyslipidaemia means that the total serum cholesterol more than 200 mg/ dl &/or the serum triglycerides more than 150mg/dl.⁶

Results

The mean age \pm SD for the study group was (56.51 \pm 9.91) years and male/female ratio was (1.08) and the mean of age of onset and the duration of diabetes \pm SD were (47.2 \pm 9.50) (8.8 \pm 7.0) years respectively. The patients treated by diet alone were 8.5% and 62% were treated by oral hypoglycemic agents and the remaining 29.5% was treated by

insulin (Table 1).Prevalence of hypertension among study group was (54.5) %, table (2).By direct measurement of blood pressure of the study group (200 patients) there was 169 patients' uncontrolled hypertension and only 31 patients with normal blood pressure. Patients who have positive history of hypertension (109), 94 patients were on treatment, and 15 patients were on no treatment. In the patients who were having uncontrolled hypertension (169), 74 patients had no previous history of hypertension and were discovered at the time of the study and were taking no medication for their uncontrolled blood pressure. The remaining of the uncontrolled hypertensive patients (95 patients) had +ve history yet only 82 patients were on treatment and the remaining 13 patients were on no treatment. Only 31 patients out of the 200 patients of the study group were with normal blood pressure ,17 patients of them had no history of hypertension and therefore they were on no treatment while 14 patients had +ve history, out of which 12 were taking medication and 2 were not on medication. (Table2).In this study

group of 200 patients only103 patients were having +ve history of dyslipidemia while 97 patients were having no history of dyslipidemia.

The patients with +ve history of dyslipidemia were (103) patients, only (80) patients were on treatment while 23 patients were on no treatment. By direct measurement of total serum cholesterol and serum triglycerides in the study group (200 patients), 127 patients show uncontrolled dyslipidemia, while 73 patients were controlled. In the controlled group (73 patients), there was 33 patients with no history of dyslipidemia and were on no treatment, while the remaining 40 patients had +ve history, 31 patients of them on treatment and 9 on no treatment. The uncontrolled group (127) patients, 64 patients without history and were on no treatment, and 63 patients with +ve history, yet only 49 patients were on treatment and 14 on no treatment at all. (Table3).Only 9 patients who constituted (4.5% of study group) achieved the targets blood pressure, total serum cholesterol and serum triglycerides. (Table 4).

Table (1) Distribution of study patients according to type of treatment.

Type of treatment	Therapeutic methods		No.	%
	Diet alone		17	8.5
	Oral hypoglycemic agent		124	62
	Insulin		59	29.5

Table (2): Patients according to their history of hypertension, use of antihypertensive agents and the control of blood pressure.

History of hypertension		Good control	Poor control	Total No. (%)
		No. (%)	No. (%)	
Positive history	On drug	12 (6%)	82 (41%)	94 (47%)
	No drug	2 (1%)	13 (6.5%)	15 (7.5%)
Negative history		17 (8.5%)	74 (37%)	91 (45.5%)
Total		31 (15.5%)	169 (84.5%)	200 (100%)

Table (3): Patients according to their history of dyslipidemia, use of lipid lowering agents and the control of dyslipidemia.

History of dyslipidemia		Good control	Poor control	Total No. (%)
		No. (%)	No. (%)	
Positive history	On drug	31 (15.5%)	49 (24.5%)	80 (40%)
	No drug	9 (4.5%)	14 (7%)	23 (11.5)
Negative history		33 (16.5%)	64 (32%)	97 (48.5%)
Total		73 (36.5%)	127 (63.5%)	200 (100%)

Table (4): Patients & control; blood pressure, serum total cholesterol and triglycerides.

		Control of dyslipidemia N=(200)		Total No. (%)
		Good No. (%)	Poor No. (%)	
Control hypertension	Good	9 (4.5%)	22 (11%)	31 (15.5%)
	Poor	64 (32%)	105 (52.5%)	169 (84.5%)
	Total	73 (36.5%)	127 (63.5%)	200 (100%)

Discussion:

This study showed that there were only 31 patients out of 200 patients with type 2 diabetes who were having controlled BP, representing only 15.5% of the total number of patients included in this study group.

Seventy four patients (37%) were even not having any history of hypertension neither were diagnosed as hypertensive previously and discovered by accident during the examination which was done during the study, in addition to 95(47.5%) patients who were having history of hypertension and still not controlled, this make the total no of uncontrolled hypertensive patient to 169 out of the 200 patients representing 84.5% of the patients included in this study group.

This could be due to many reasons that are related either to the doctors who were treating those patients or some are related to the patients themselves while others could be related to the kind of treatment those patients are taking for their hypertension.

Clearly that those patients who have no history of hypertension 74 patients and discovered accidentally during the study, had not been properly examined for hypertension parse or misdiagnosed by their doctors (because they were on treatment for their diabetes but not for their hypertension) which could be either due to:-

1. Improper examination or
2. Improper follow up or
3. Considering blood pressure as high as 140 over 90 as normal by some general practitioners.
4. All of these reasons,

Therefore it is a most important duty of the clinicians is to educate patients about proper follow up and the importance of checking the blood pressure during each visit to the doctor, and updating their information's about treatment of hypertension in diabetic patients which should be treated vigorously and properly.

The other 95 patients who were uncontrolled yet they were having history of hypertension representing another face of the problem ,they know that they are hypertensive which means previous diagnosis of high blood pressure yet still uncontrolled, which could be to many reasons as

- 1- Not taking treatment for hypertension, in fact 13 patients were not taking any medication in spite of positive history.
- 2- Patient non compliance to treatment.
- 3- Type of treatment and the availability of good antihypertensive treatment in regard to its cost.
- 4- The lack of education for patients about the importance of treating hypertension properly in diabetic patients.

It is important to consider the blood pressure control as one of the targets to be achieved in type 2 diabetic patients through better follow up, proper examination, proper education, and better updating of

information's for both doctors and patients, 64 patient out of 200 patients had no previous history of diagnosis of dyslipidemia (representing 32%) yet they were poorly controlled in regard to their lipid levels, as it was discovered accidentally during our study investigation for lipid profile.

This mean that those patients may had been previously examined for dyslipidemia and they do not know the importance of lipid profile in the treatment of type 2 diabetes, on the other hand it may mean that either they were not warned by their doctors about this kind of investigation or they did not take that warning seriously in the subsequent visit to their doctors. It is the duty of the doctor to emphasize on lipid profile investigation in every patient with type 2 diabetes at the first visit or in the follow up of the patients. While 63 patients out of 200 patients had positive history of dyslipidemia yet still uncontrolled (31.5%). This may be due to many reasons; some of the patients are not taking their medication (14 patients 7%). But the others were taking medication and still uncontrolled which could be due to the following:

- Lack of education about the type of diet.
- Improper type of drug or the dose of the drug that the patient needs.
- Some of the patients take the treatment at morning, or with less dose than it should be taken.
- The cost of the highly trusted drugs is very high, so the patients might use drugs with less potency.
- Patient not compliance to treatment.

About 63.5% of this study group show bad control of dyslipidemia and this is an indication that we need to be more careful to treat dyslipidemia, in the primary diagnosis, and in follow up and lastly in educating the patients about dyslipidemia of course the availability of cheaper drugs yet of high efficacy is another reason to solve this problem.

According to our result, it is important to emphasize that treating diabetes is not to treat hyperglycemia alone, but in fact controlling blood pressure and lipid abnormality is as important as controlling hyperglycemia.

All patients should have their lipid profile and their blood pressure checked and recorded at diagnosis and scheduled check again when there is follow up of the patient in the next visit to this doctor.

Patients should know and be aware that blood pressure and dyslipidemia is as important as their blood sugar levels.

Proper education about life style modification and dietary education for the diabetic patient directed towards controlling blood sugar ,blood pressure and dyslipidemia and ,not only hyperglycemia alone.

Proper treatment of high blood pressure and abnormal lipid profile by the doctors and trying to achieve the guideline figures for both is at most importance.

Updating the knowledge of the doctors' especially general practitioners about the recent advances in guidelines for treating hyperglycemia, blood pressure and dyslipidemia in diabetic patients is also important.

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