Physiological parameters differences in patients with hypertension and diabetes mellitus

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Abstract

Hypertension and diabetes mellitus is a common medical diseases affect both female and male and associated with different types of complications like cardiovascular diseases, renal disease, and arterial diseases. Data was collected from May to the end of 2010 in baiji hospital from 100 cases in age from 40- 70 years (50 cases suffering from hypertension and 50 cases from diabetes). About the measurement of physiological parameters like (blood urea, serum creatinine, blood pressure and heart rate it was found that in cases of hypertension the blood urea and serum creatinine increase above the normal in 4 cases while in diabetes cases only in 2 cases. The measurement of blood pressure in these two group is increase above the normal in 33 cases of hypertensive cases and within normal in 17 cases while in diabetic cases there is 4 cases with increase in blood pressure and 9 cases with decrease blood pressure, about the measurement of heart rate, its increase above normal value in 14 cases of hypertensive patients and 8 cases in diabetic patients, and decrease below normal in 10 cases of hypertensive patients and 4 cases in diabetic patients. In hypertension cases there are 20 cases (40 %) complain from recurrent attack of chronic urinary tract infection and 15 cases(30%) complain from hydronephrosis and protein urea and 4 cases(8%) from chronic renal failure, other cases its normal, while in diabetes mellitus there are 37 cases(74 %) developed protein urea and 2 cases (4%) complain chronic renal failure and other cases its normal. Regarding the ischemic heart disease, there are 21 cases (42%) of hypertension complain from recurrent attach of ischemic heart disease, 6 cases (12%) complain from peripheral artery disease and 3 cases (6%) complain from heart failure, other cases its normal, while in diabetes mellitus there are 10 cases(20%) complain from peripheral vascular disease, 3 cases(6%) from coronary heart disease, and one cases(2%) from heart failure. About the family history of these diseases there are only 15 cases (30%) of hypertension with a family history of disease, while in diabetes mellitus there are 35 cases (70%) with a family history of diseases.

اختلاف المقاييس الفسيولوجية لدى المرضى المصابين بارتفاع ضغط الدم ومرض السكري

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الملخص

ضغط الدم وداء السكري من الإمراض الشائعة التي تصيب الذكور والإناث إضافة إلى بعض المضاعفات التي تصيب الجسم مثل إمراض القلب والشرايين والكلى .في هذه الدراسة تم اخذ 100 حالة مرضية(50 تعاني من ضغط الدم و 50 من داء السكري) للأعمار من 40-70 سنة. تم قياس نسبة اليوريا والكرياتنين ووجد زيادة في هذه النسب في أربعة حالات بالنسبة لمرضى الضغط وحالتين لمرضى السكر 0 ووجد أيضا ارتفاع ضغط الدم في 33 حالة من مرضى الضغط وفي 5 حالات من مرضى السكري أما بالنسبة لعدد دقات القلب فأن هنالك 14

حالة من مرضى الضغط و 8 حالات من مرضى السكر يعانون من زيادة في العدد (زيادة في عدد دقات القلب) و10 حالات من مرضى الضغط و4 من مرضى السكر يعانون من نقص في العدد (نقصان في عدد دقات القلب) . بالنسبة لحالات ضغط الدم وجد في هذه الدراسة إن هناك 40% يعانون من التهابات كلى متكررة و 15% من توسع في حوض الكلى و8% من عجز كلوي مزمن . أما بالنسبة لمرض السكري فوجد إن 74% يعانون من وجود بروتين في الإدرار و 2% من عجز كلوي مزمن. أما بالنسبة لإمراض القلب فان هناك 42% من حالات الضغط يعانون من أزمات قلبية حادة و 12% من أمراض الشرايين و6% من عجز القلب . أما بالنسبة لمرضى السكري فأن 20% من يعانون من أمراض الشرايين و 6% من أزمات قلبية حادة و 2% من عجز القلب. بالنسبة لتاريخ العائلة المرضي فأن 30% من مرضى الضغط يعانون من وجود المرض في العائلة ، أما في مرضى السكري فأن النسبة هي 70%.

Introduction

Hypertension is a chronic medical condition in which the systemic arterial blood pressure is elevated, it is classified as either primary (essential) or secondary, about 90-95% of cases are termed primary hypertension which refers to high blood pressure for which no medical cause can be found (1). The remaining 5-10 % of cases (secondary hypertension) are caused by other condition that affect the kidney, arteries, heart or endocrine system (2). Persistent hypertension is one of the risk factors for stroke, myocardial infarction, heart failure and arterial aneurysm and is leading cause of chronic kidney failure (3).Moderate elevation of arterial blood pressure leads to shortened life expectancy. Dietary and lifestyle changes can improve blood pressure control and decrease the risk of associated health complications, although drug treatment may improve necessary in patients for whom lifestyle changes prove ineffective or insufficient(4). Once the diagnosis of hypertension has been made physicians will attempt to identify the underlying cause based on risk factors and other symptoms if present, secondary hypertension is more common in preadolescent children with most cases caused by renal disease. Primary hypertension is more common in adolescent and has multiple risk factors including obesity and a family history of hypertension (5). Diabetes mellitus is a heterogeneous group of metabolic disease characterized by high blood glucose levels (6). The social and financial burden of diabetes is mainly due to complications (7). An estimate to 15 % of health care budgets worldwide are devoted to diabetes (8). Increasing incidence in the countries especially in the younger age group affecting mainly the people in the productive their lives is also of great concern. There are two major types of DM called type 1 and type 2, type one was also called insulin dependent diabetes mellitus or juvenile onset DM, in type one the pancreas undergoes an autoimmune attack by the body itself and is rendered incapable of making insulin, exposure to certain viral infections(mumps and coxsackie viruses) or other environmental toxins may serve to trigger abnormal antibody responses that cause damage to the pancreas cells where insulin is made. Type 2 diabetes was also referred to as non insulin dependent diabetes mellitus or adult onset diabetes mellitus, in this type the patients still produce insulin but do so not relatively inadequately for their body needs particularly in the face of insulin resistance. In many cases this means the pancreas produces larger than normal quantities of insulin, and the major features of this type is a lack of sensitivity to insulin by the cells of the body(9).

Aim and objective

The aim of this study is to identify the physiological parameters differences and other relationship between the hypertension and diabetes mellitus for different cases complained from these disease.

patients and Methods

Data was collected randomly in Baiji hospital from may to the end of 2010 from 100 cases suffering from HT and DM . The data was obtained by using questionnaire which contain different questions related to these diseases.
This questionnaire contain the following data:

1- Name
2- Age
3- Duration of disease
4- Family history of disease
5- Investigation which include:
A- general urine examination (for albumin in urine)
B- blood urea
C- serum creatinen

Blood pressure measurement and heart rate were done for all patients

Results

100 patients were participated in this study , 50 cases complain from hypertension and 50 cases complain from diabetes mellitus. About the measurement of physiological parameters like (blood urea, serum creatinine, blood pressure and heart rate) it was found that in cases of hypertension the blood urea(Table 1) and serum creatinine(Table 2) increase above the normal in 4 cases while in diabetes cases only in 2 cases. The measurement of blood pressure in these two group is increase above the normal in 33 cases of hypertensive cases and within normal in 17 cases while in diabetic cases there is 4 cases with increase in blood pressure and 9 cases with decrease blood pressure(Table 3),about the measurement of heart rate, its increase above normal value in 14 cases of hypertensive patients and 8 cases in diabetic patients, and decrease below normal in 10 cases of hypertensive patients and 4 cases in diabetic patients(Table 4). Regarding the cases of hypertension, there are 20 cases (40%) complain from recurrent attack of chronic urinary tract infection and 15 cases(30%) complain from hydronephrosis and protein urea and 4 cases(8%) from chronic renal failure, in other cases there are no any renal abnormality or diseases , while in diabetes mellitus there are 37 cases(74%) developed protein urea and 2 cases (4%) complain from chronic renal failure while other cases its normal and not complain from renal diseases. Regarding the ischemic heart disease like myocardial infarction, angina pectoris and heart failure, there are 21 cases (42%) of hypertension complain from recurrent attach of ischemic heart disease, 6 cases (12%) complain from peripheral artery disease and 3 cases (6%) complain from heart failure, other cases its normal and not complain from any types of these diseases, while in diabetes mellitus there are 10 cases(20%) complain from peripheral vascular disease, 3 cases(6%) from coronary heart disease, and one cases(2%) from heart failure. About the family history of these diseases there are only 15 cases (30%) of hypertension with a family history of disease, while in diabetes mellitus there are only 35 cases (70%) with a family history of diseases.

Discussion

According to the data obtained in this study and about the measurement of physiological parameters like (blood urea, serum creatinine, blood pressure and heart rate it was found that in cases of hypertension the blood urea and

serum creatinine increase above the normal in 4 cases while in diabetes cases only in 2 cases. The measurement of blood pressure in these two group is increase above the normal in 33 cases of hypertensive cases and within normal in 17 cases while in diabetic cases there is 4 cases with increase in blood pressure and 9 cases with decrease blood pressure, about the measurement of heart rate, its increase above normal value in 14 cases of hypertensive patients and 8 cases in diabetic patients, and decrease below normal in 10 cases of hypertensive patients and 4 cases in diabetic patients. In hypertension cases it was found that , there are 20 cases (40%) complain from recurrent attack of chronic urinary tract infection and 15 cases(30%) complain from hydronephrosis and protein urea and 4 cases(8%) from chronic renal failure, in united states 3% of the adult population has an elevated serum creatinine level and 70% of these have hypertension (10), as patient with chronic kidney disease progress to end stage renal disease 86% are diagnosed with hypertension, it has long been recognized that kidney function affected by hypertension (11). In other cases there are no any renal abnormality or diseases. In cases of diabetes mellitus there are 37 cases(74%) developed protein urea with urinary tract infection, and 2 cases (4%) complain from chronic renal failure, while other cases its normal and not complain from any renal diseases. There are 25-40 % of patients with diabetes mellitus develop microalbuminurea and vast majority of these patients progress to proteinurea over the following years(12). Duration of diabetes is one of the most important risk factors for diabetic nephropathy , despite long duration of diabetes only 30- 50% of patient with diabetes develop diabetic nephropathy. Regarding the ischemic heart disease like myocardial infarction, angina pectoris and heart failure , there are 21 cases (42%) of hypertension complain from recurrent attach of ischemic heart disease, 6 cases (12%) complain from peripheral artery disease and 3 cases (6%) complain from heart failure, other cases its normal and not complain from any types of these diseases, persistent hypertension is one of the risk factors for myocardial infarction and heart failure(3), while in diabetes mellitus there are 10 cases(20%) complain from peripheral vascular disease, 3 cases(6%) from coronary heart disease, and one cases(2%) from heart failure. Diabetes lead to decrease life expectancy , about 50% die of cardiovascular disease, the cardiovascular diseases that accompany diabetes include angina, myocardial infarction, peripheral arterial disease it could be due to the direct toxic effects of hyperglycemia (6). About the family history of these diseases there are only 15 cases (30%) of hypertension with a family history of disease, while in diabetes mellitus there are only 35 cases (70%) with a family history of diseases.

Table (1):- show the measurement of blood urea in chronic renal failure cases in both H.T and D.M

Hypertension cases	100 mg/dl	140 mg/dl	133 mg/dl	155 mg/dl
Diabetes Mellitus cases	90 mg/dl	115 mg/ dl		

Table (2):- show the measurement of serum creatinin in chronic renal failure cases in both H.T and D.M.

Hypertension cases	**4 mg/dl**	**5 mg/dl**	**4 mg/dl**	**6 mg/dl**
Diabetes Mellitus cases	**4 mg/dl**	**6 mg/ dl**		

Table (3):- show the measurement of blood pressure in both hypertension cases and diabetes mellitus cases.

Measurement of blood pressure	**Above the normal**	**Below the normal**	**Within normal**
H.T cases	**33 cases**		**17 cases**
D.M cases	**5 cases**	**9cases**	**36 cases**

Table (4) show the measurement of heart rate in both hypertension cases and diabetes mellitus cases

Measurement of heart rate	**Above the normal**	**Below the normal**	**Within normal**
H.T cases	**10 cases**	**14 cases**	**26 cases**
D.M cases	**4 cases**	**8 cases**	**38 cases**

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