

Dedication

To my parents

and

friends

To my teachers for their helps

Declaration

This research was carried out by the undersigned at the Sudan University of Science & Technology. During the period October 2005 – 2006 and was not submitted for any degree before.

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ABSTRACT

This is a prospective study was conducted during the period from October 2004 to December 2005 at Khartoum Center For Dialysis and Kidney Transplantation.

88 patients with end-stage renal disease ESRD under regular haemodialysis (twice a week) were selected randomly with different ages and sexes, to compare the plasma cholesterol and triglycerides pre and post haemodialysis.

Plasma cholesterol and triglycerides were measured pre and post haemodialysis in order to assess the effect of haemodialysis on cholesterol and triglycerides concentration.

Preliminary investigations obtained from this study revealed that the majority of patients with end-stage renal disease (ESRD) were presented with other diseases namely hypertension 73.86 %, diabetes mellitus 11.36 %, renal stone 19.31 %, and also infestation of Hepatitis virus (HBV) were found in about 10.22 % of patients with end-stage renal disease.

The findings of this study also showed that patients with end-stage renal disease (ESRD) exhibited have increase plasma cholesterol pre haemodialysis as a result of renal failure and there is a significant increase in the mean of cholesterol post haemodialysis. (Being 148.73 and 169.14 mg/dl before and after haemodialysis respectively.

The results of this study showed that plasma triglycerides in patients with end-stage renal disease maintained a non significant increase in the mean of plasma triglycerides post haemodialysis, being 184.48 and 193.74 mg/dl before and after haemodialysis respectively.

No statistical difference in plasma cholesterol concentration were found between males and females.

The age appeared to have no effect on the level of plasma cholesterol and triglycerides concentration post haemodialysis.

The increase of plasma cholesterol and triglycerides among end-stage renal disease under haemodialysis was reported to be due to heparin dose given to the patients before haemodialysis to prevent clot formation in the venous lines, which had aside effects include hyperlipidaemia, thrombocytopenia and allergy (rare).

The results indicate that patients with end stage renal disease under regular haemodialysis showed abnormalities of lipid metabolism, the progressive elevation of plasma triglycerides could be relevant to the development of cardiovascular disease in the patients and represent the main causes of death.

A concluding from this study that patients under regular haemodialysis had increased plasma cholesterol and may lead to hypercholesterolemia and hence with increase risk of atherosclerosis and coronary heart disease and lead to increase death rate among the patients with end-stage renal disease.

ملخص البحث

اجريت هذه الدراسة التوقيعية خلال الفترة من اكتوبر 2004 حتى ديسمبر عام 2005 م في مركز الخرطوم لغسيل وزراعة الكلى.

تم اختيار 88 مريض بالفشل الكلوى تحت الغسيل الدموى (مرتين اسبوعيا) اختيارا عشوائيا في اعمار مختلفة بالنسبة للنوعين (ذكر وانثى) وتمت مقارنة مستويات الدهون المختلفة في بلازما الدم (الكولسترون وثلاثي الجلسرايد) قبل وبعد إجراء الغسيل الدموي وذلك لدراسة تاثير الغسيل الدموي على مستوى تركيز الكولسترون وثلاثي الجلسرايد و معرفة العوامل التي تأثر على هذا المستوى.

اوأوضحت الفحوصات الاولية للمرض ان غالبية المرضى يعانون من امراض اخرى مصاحبة لمرض الفشل الكلوى مثل ارتفاع ضغط الدم ومرض السكري ووجود حصاوى بالكلى ووجود اصابات بالتهاب الكبد الفيروسى عند المرض تحت الغسيل الدموي.

اوأوضحت نتائج الدراسة تركيز الكولسترون في بلازما الدم لدى مرض الفشل الكلوى ويعزى ذلك لتأثير الفشل الكلوى على تمثيل الدهون.

واوضحت النتائج ان هناك زيادة معنوية في مستوى الكولسترون في بلازما الدم لدى مرضي الفشل الكلوى بعد الغسيل الدموي .

ووأوضحت نتائج الدراسة في حالة ثلاثة جلسرايد عدم وجود زيادة معنوية في تركيزه في بلازما الدم قبل وبعد اجراء عملية الغسيل الدموي .

وعند دراسة تأثير النوع على مستوى تركيز الكوليسترول وثلاثي الجلسرايد قبل وبعد اجراء الغسيل الدموي فلا يوجد فرق معنوي في تركيز الكوليسترول وثلاثي الجلسرايد على النوع (ذكر ام انثى) .

وعند دراسة تأثير العمر على تركيز الكوليسترول وثلاثي الجلسرايد لدى مرضى الفشل الكلوي اتضح انه لا يوجد تأثير بعد اجراء الغسيل الدموي .

عززت الدراسة أسباب ارتفاع الكوليسترول وثلاثي الجلسرايد لدى مرضى الفشل الكلوي الى مادة الهيبارين التي تعطي كمانع للتجلط ولديها تأثيرات جانبية منها زيادة مستوى الدهون في الدم ونقص عدد الصفائح الدموية ونادرًا ما تؤدي الى فرط التحسس لدى مرضى الفشل الكلوي بعد اجراء الغسيل الدموي .

وأوضحنت النتائج ان لدى مرضى الفشل الكلوي تحت الغسيل الدموي اختلال واضح في تمثيل الدهون وارتفاع ثلاثة جلسرايد وهو من المؤشرات القوية لحدوث حالات اصابات الاوعية الدموية والتي تعتبر سبب رئيسي لحالات الوفاة عند مرضى الفشل الكلوي .

وأوضحنت نتائج هذه الدراسة ان ارتفاع تركيز الكوليسترول لدى مرضى الفشل الكلوي تحت الغسيل الدموي يؤدي الى ارتفاع مفرط في الكوليسترول في بلازما الدم مما يعتبر مؤشر قوي

لزيادة حالات تصلب الشرايين وامراض القلب وبالتالي ازدياد
معدلات الوفاة لدى مرضى الفشل الذين يتم علاجهم بالغسيل
الدموي .

OBJECTIVES

The aims of this study are:

1. To measurement the levels of plasma cholesterol and triglycerides in end stage Renal disease (ESRD) pre and post haemodialysis
2. To study the effect of sex and age on the level of cholesterol and triglycerides after haemodialysis.

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INTRODUCTION

Renal failure has been considered as one of the most major health problems in almost all over the world. In Sudan, It has been estimated from hospitals records that, the number of patients admitted to local hospitals complaining chronic renal failure is a dramatic increase. It is evident that in the last years there is an increase incidence of renal failure in Sudan which is reflected in the increased number of centres for dialysis and kidney transplantation, Khartoum Teaching Hospitals, Ibnsina and Soba hospitals).

We thought to assess the efficiency of dialysis (Haemodialysis and peritoneal dialysis) in reducing waste products in patient with chronic renal failure to be sure that the dialysis relives the renal dysfunction.

In United Kingdom, 90 new patients per years were dialysed in 1998. Of these 46% were < 65 years old and 33% < 70 years old. Median age at start of dialysis was 63, with a slight excess of men.

In the United State of America U.S.A, 1 in 1000 of the population are receiving treatment for chronic renal failure, this was a lower rate of renal replacement therapy than in many other developed countries, in U.S.A 296 new patients per years were dialysed in 1997, Japan and Singapore reports similar figures (229 and 158, respectively). (Jeremy, 2002)

A 40 years old man starting dialysis in the United State of America U.S.A, could expect to live (5 9 _) years if he was black, and (6 9 _)(years if he white. (Jeremy, 2002)

The death rate of dialysis patients has decreased to approximately 23 deaths per 100 patients per years, despite the increasing age and co-morbidity of patients. (Jeremy, 2002)

The excretory function of the kidney can be partially replaced by dialysis. The best results are obtained by an integrated approach to management, using the most appropriate form therapy-haemodialysis, continuous ambulatory peritoneal dialysis or transplantation for the patient depending on the clinical circumstances present.

The interdiction of regular intermittent haemodialysis has prolonged the lives of many patients with chronic renal failure. Haemodialysis should be started when despite adequate medical treatment, the symptoms of uraemia have become troublesome, preferable before the patient has developed serious consequences of uraemia.

Unfortunately, chronic kidney disease often cannot be cured. But if you are in the early stages of a kidney disease, you may be able to make your kidneys last longer and you will also want to be sure that risks for heart attack and stroke minimized.

In maintenance haemodialysis patients a high risk for atherosclerotic vascular disease has been well documented and cardiovascular disease is the major cause of mortality in this setting

Dyslipidemia has been proposed as a major reason for increased prevalence of atherosclerotic complication, although other predisposing factors such as hypertension and diabetes mellitus, due to long term dialysis for end-stage renal disease patients.