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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Dr. Mohammed Abd Elraheem ……..

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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 a bout 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 anon 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 hyper lipidaemia, 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 التوقعية خلال الفترة من اكتـوبر 2004 حتى ديسمبر عـام 2005 م فـى مركـز الخرطـوم لغسـيل وزراعـة الكلى.

تم اختيار 88 مريض بالفشل الكلوى تحت الغسـيل الـدموى (مرتيـن اسـبوعيا) اختيـارا عشـوائيا فـي اعمـار مختلفـة بالنسـبة للنوعين(ذكر وانثي) وتمت مقارنة مستويات الدهون المختلفـة فـي بلازمـا الـدم (الكولسـترول وثلاثـي الجلسـرايد) قبـل وبعـد إجـراء الغسيل الدموي وذلك لدراسة تاثير الغسيل الـدموي علـي مسـتوي تركيز الكولسترول وثلاثي الجلسـرايد و معرفـة العوامـل الـتي تـأثر علي هذا المستوي.

اوضـحت الفحوصـات الاوليـة للمـرض ان غالبيـة المرضـى يعانون من امـراض اخـرى مصـاحبة لمـرض الفشـل الكلـوى مثـل ارتفاع ضغط الدم ومرض السكرى ووجود حصـاوى بـالكلى ووجـود اصابات بالتهاب الكبد الفيروسى عند المرض تحت الغسيل الدموى.

اوضحت نتائج الدراسـة تركيـز الكلسـترول فـي بلازمـا الـدم لدى مرض الفشل الكلوى ويعزي ذلك لتـأثير الفشـل الكلـوى علـى تمثيل الدهون.

واوضـحت النتـائج ان هنـاك زيـادة معنويـة فـى مسـتوى الكلسـترول فـي بلازمـا الـدم لـدي مرضـي الفشـل الكلـوي بعـد الغسيل الدموي .

وواضحت نتـائج الدراسـة فـي حالـة ثلاثـى الجلسـرايد عـدم وجود زيادة معنوية في تركيزة في بلازما الدم قبل وبعد اجـراء عملية الغسيل الدموي .

وعند دراسة تأثير النوع علي مستوي تركيز الكولسترول و ثلاثي الجلسرايد قبل وبعد اجـراء الغسـيل الـدموي فلا يوجـد فـرق معنوي في تركيز الكولسترول و ثلاثي الجلسرايد علـي النـوع (ذكـر ام انثي).

وعند دراسة تـاثير العمـر علـي تركيـز الكولسـترول وثلاثـي الجلسرايد لدي مرضي الفشل الكلوي اتضح انـه لايوجـد تـاثير بعـد اجراء الغسيل الدموي .

عزت الدراسة أسباب ازدياد الكولسترول وثلاثي الجلسرايد لدي مرضي الفشل الكلوي الي مادة الهيبـارين الـتي تعطـي كمـانع للتجلط ولديها تاثيرات جانبيه منها زيادة مستوي الـدهون فـي الـدم ونقص عدد الصفائح الدمويه ونادرا ما تـؤدي الـي فـرط التحسـس لدى مرضي الفشل الكلوي بعد اجراء الغسيل الدموي .

واوضـحت النتـائج ان لـدى مرضـي الفشـل الكلـوي تحـت الغسيل الـدموي اختلال واضـح فـي تمثيـل الـدهون وازديـاد ثلاثـي الجلسـرايد وهـو مـن المؤشـرات القويـة لحـدوث حـالات اصـابات الاوعيه الدمويه والتي تعتبر سبب رئيسي لحالات الوفاه عند مرضي الفشل الكلوي .

واوضحت نتائج هذه الدراسه ان ازديـاد تركيـز الكولسـترول لدي مرضي الفشل الكلوي تحت الغسيل الدموي يؤدي الـي ازديـاد مفرط في الكلوسترول فـي بلازمـا الـدم ممـا يعتـبر مؤشـر قـوي

لازديـاد حـالات تصـلب الشـرايين وامـراض القلـب وبالتـالي ازديـاد معدلات الوفاة لدى مرضي الفشل الـذين يتـم علاجهـم بالغسـيل 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, I 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 trouble some, 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.