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بسم الله الرحمن الرحيم

شبكة المعلومـــات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

﴿ قـسـم ﴾

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد اعدت دون آية تغيرات

يجب أن

تحفظ هذه الأفلام بعيداً عن الغبار

في درجة حرارة من 15 – 20 مئوية ورطوبة نسبية من 20-40 %

To be kept away from dust in dry cool place of
15 – 25c and relative humidity 20-40 %

بعض الوثائق الأصلية تالفة

بالرسالة صفحات

لم ترد بالأصـــل

ASSESSMENT OF THE VALUE OF TREATMENT OF ANEMIA IN CHRONIC RENAL FAILURE PATIENTS ON REGULAR HEMODIALYSIS BY INTRAVENOUS IRON

Thesis

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List of abbreviations

ARF	Acute renal failure
BUN	Blood urea nitrogen
B_{12}	Vitamin B_{12}
CRF	Chronic renal failure
CAPD	Continuous ambulatory peritoneal dialysis
DNA	Deoxyribonucleic acid
DMTI	Divalent metal transporter I
EDTA	Ethylenediamine tetra-acetic acid
ESRD	End stage renal disease
EPO	Erythropoietin
Fe	Iron
FeOOH	Ferric oxyhydroxide
HCT	Hematocrit
MCH	Mean corpuscular hemoglobin
MCHC	Mean corpuscular hemoglobin concentration
MCV	Mean corpuscular volume
MEIA	Microparticle enzyme Immunoassay
Mn	Mononuclear
PIT	Plasma iron turnover
PTH	Parathyroid hormone
RBCs	Red blood cells
r-HuEPO	Recombinant human erythropoietin
TIBC	Total iron binding capacity

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INTRODUCTION

Introduction

Renal failure is the cessation of renal function, resulting in biochemical, metabolic, fluid, electrolyte and acid-base derangement in the individuals internal environment that seriously threaten life.[1]

There are two types of renal failure that can be differentiated by their definitions, etiologies and clinical courses or disease progression: acute and chronic renal failure.[1]

a. Acute renal failure:

Acute renal failure (ARF), a term used to describe any disorder characterized by a rapid decline in renal function.[2]

The ability of the kidney to excrete nitrogenous wastes and to regulate the composition of the body internal milieu require:

1. Renal perfusion to be maintained at a level that ensures near normal rates of glomerular ultrafiltration and tubule ion and fluid transport.
2. Intrinsic renal cell functions to be intact.
3. The urine so formed to encounter no limitation in its passage through the lower urinary tract, including the final phases of micturition.[1]

b. Chronic renal failure:

Chronic renal failure (CRF) is a continuous process that begins when some nephrons are lost and ends when the remnant nephron population can no longer sustain life.[2]

Many etiologies can result in chronic renal failure, most can be classified as belonging to one of the following nine categories: glomerular disease, tubular disease, vascular disease, infectious diseases, obstructive disease, collagen disease, metabolic renal disorders, congenital diseases and neoplastic disease.[2]

The clinical course of chronic renal failure progresses gradually and the patient is often unaware that there is a problem until very late in the process. The disease progresses through four phases of functional deterioration including diminished renal reserve, renal insufficiency, renal failure and the uremic syndrome. During the third phase, renal failure, the patient usually recognizes that there is a problem.[2]

Clinical use of dialysis:

When patients develop end-stage kidney disease, there are a number of treatment modalities available. Hemodialysis is presently the most commonly used treatment for these patients. It is usually performed in a dialysis unit as 3 to 4 hour treatments three times weekly. The amount of dialysis per session and per week should be

tailored to each patient according to how much protein the patient ingests and his nutritional status in order to control the blood urea nitrogen (BUN) at optimal levels.[3]

Principles of dialysis:

Both hemodialysis and peritoneal dialysis can be used to remove or add small molecular weight solute from or to body fluid. The direction and rate of solute movement can be partially controlled by the composition of the dialysis fluid.[4]

Dialysis, by a combination of diffusion and ultrafiltration, can change both the composition and volume of body fluid. In hemodialysis, blood and artificial plasma-like fluids are pumped into a dialyzer; inside the dialyzer the blood and dialysis fluid are separated by an artificial membrane. To perform this procedure it is necessary to have access to the vascular system. This can be accomplished by acutely puncturing an artery or vein. Blood from the access site is anticoagulated (usually with heparin) to prevent clotting in the venous side of the access site.[4]

Normal iron metabolism

All cells of living organisms require iron for the normal functions of a multitude of metabolic pathway.[5] It is a paradox of life on earth that iron is present in abundance throughout the planet, yet living organisms have great difficulty in extracting it. Therefore, organisms have developed highly conserved mechanism to preserve iron stores.[6] The content of iron in the human body is normally 3 – 4 g, corresponding to a concentration of 40 – 50 mg of iron/kg body weight. Women have a lower body content of iron than men. Most of the iron is found in essential iron compounds that are required for normal metabolism. About 60% of the iron is present in the form of hemoglobin in the circulating red blood cells and another 6 – 7 mg/kg occurs throughout the body in the form of myoglobin and several heme enzymes (cytochromes, catalases, peroxidases), as well as nonheme enzymes table (1).[7] The value of iron in biochemical reactions is largely attributable to the ease with which it is oxidized and reduced. It can serve as a carrier for oxygen and electrons and in addition act as a catalyst for oxygenation, hydroxylation and other vital metabolic processes. For example, simple conversion of valence allows cytochromes readily to transfer electrons as part of oxidative phosphorylation.[8]