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Research Article

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Intestinal Dialysis Research Progress and the Early Treatment of a Non-Diabetic Patient with Symptomatic Uremia and Fatty Liver with Intestinal Dialysis: The Practice of Evidence-Based Medicine

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ABSTRACT

Background: Chronic renal failure results from a variety of pathophysiological mechanisms and etiologies, and is associated with progressive and irreversible damage and loss of the kidneys' tissue leading to failure of the kidneys to excrete waste products, and also failure to perform some other functions. Many patients with chronic renal failure in a country like Iraq has been reported to be reluctant to accept dialysis therapies because of the wide spread notion of its association with high mortality. The lack of effective, convenient, and affordable therapy for chronic renal failure in many regions of the world should not mean should that the patients with advanced chronic renal failure are left without other suitable, convenient and acceptable care. The aim of this paper is to describe the early treatment of a patient with symptomatic uremia with intestinal dialysis.

Patients and Methods: A 60-year non-diabetic male patient was experiencing progressive symptomatic uremia. On the 18th of November, 2023, blood urea was elevated at 217 mg/dL, serum creatine was 5.2 mg/dL, and he had symptomatic uremia with nausea, vomiting, fatigue, pruritus and anemia. The patient was treated with intestinal dialysis (Acacia gum supplementation plus conservative dietary and pharmacological management of chronic renal failure) which was prescribed according to the latest published guidelines. It was necessary during the first week of treatment to eliminate almost all dietary protein, and his diet was consisting mainly of high calorie juices, grapes, and water melon.

Results: When the patient was seen on the 2nd of December, 2023, treatment was associated with marked symptomatic and laboratory improvements. Blood urea was 115 mg /dL, serum creatine was 3.6 mg /dL However, and serum calcium was 5.3 mg/dL (Normal ranges: 8-10.5 mg/dL). Therefore, oral alphacalcidol was added in a dose of 1 microgram daily.

Conclusion: Intestinal dialysis will continue to be used to improve the management of chronic renal failure and symptomatic uremia as long as there is no convenient and affordable therapy for chronic renal failure in many regions of the world.

Keywords: Symptomatic Uremia, Intestinal Dialysis, Fatty Liver, Educational Article, Expert Opinion

Introduction

Chronic renal failure results from a variety of pathophysiological mechanisms and etiologies and is associated with progressive and irreversible damage and loss of the kidneys' tissue leading to failure of the kidneys to excrete waste products, and also failure to perform some other functions.

The incidence of chronic renal failure has been disturbingly increasing during the previous decades, and it has been increasingly considered as a global health problem. The availability of renal replacement therapy and its quality are much less in developing countries than in the advanced countries. That was generally attributed to the associated high cost and the complexity of its technology. Economically disadvantaged courtiers have priorities to provide the basic health services and to improve them rather than to offer expensive therapeutic technologies that are considered by a significant number of their populations as inconvenient.

Many patients with chronic renal failure in a country like Iraq has been reported to be reluctant to accept dialysis therapies because of the wide spread notion of its association with high mortality.

The lack of convenient and affordable therapy for chronic renal failure in many regions of the world should not mean should that the patients with advanced chronic renal failure are left without other suitable, convenient and acceptable care.

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Therefore, the need for a more robust and more convenient therapy for chronic renal failure has been increasingly emphasized during the previous two decades. A novel urea lowering dietary therapy that could provide a novel paradigm for the management of chronic renal failure has been described. This new dietary therapy was used in combination with the traditional known therapies of chronic renal failure, and has been increasingly known as intestinal dialysis [1-3].

The aim of this paper is to describe the initial treatment of a patient with symptomatic uremia with intestinal dialysis.

Patients and Methods

A 60-year non-diabetic male patient was experiencing progressive symptomatic uremia with anorexia, fatigue, pruritus and anemia over the previous weeks.

On the 12th of November, 2023, blood urea was elevated at 220 mg/dL, serum creatine was 5.2 mg/dL, and he was anemic with hemoglobin at 9.7 g/dL (Normal ranges: 11.5-16.5 g/dL). Urinalysis didn't show important findings. He was seen by more than two doctors, and all referred him for dialysis treatment which he and his family consistently rejected.

On the 18th of November, 2023, blood urea was elevated at 217 mg/dL, serum creatine was 5.2 mg/dL, and he had symptomatic uremia with nausea, vomiting, fatigue, pruritus and anemia. He was also experiencing reduction of the urine output and anemic with hemoglobin at 9.7 g/dL (Normal ranges: 11.5-16.5 g/dL).

The patient was treated with intestinal dialysis (Acacia gum supplementation plus conservative dietary and pharmacological management of chronic renal failure) which was prescribed according to the latest published guidelines [4-13].

He Received:

Bumetanide 1 mg twice daily to improve urine output.
Oral ferrous sulfate 200 mg three times daily, to be continued and adjusted according to hemoglobin level.
Oral calcium carbonate 1000 mg daily, to be continued indefinitely.
Intramuscular pyridoxine 100 mg daily for 7 days.
Intramuscular Vitamine B complex daily for 7 days.
Oral alphacalcidol 1 mcg daily, to be continued with dose adjustment as necessary according to the serum calcium level.
Oral cetirizine hydrochloride 10 mg once at night and topical crotamiton were use to control pruritus as long as they were needed.

He also received acacia gum powder 25g dissolved in 250 ml Diet 7Up, and given three times daily before meals.

It was necessary to give him oral domperidone (Motilium) 10 mg three times daily to prevent and reduce the occurrence of abdominal distention and discomfort of the intake.

It was necessary during the first week of treatment to eliminate almost all dietary protein, and his diet was consisting mainly of high calorie juices, grapes, and water melon. Therefore, nutritional support with oral royal jelly capsules was added to prevent any unexpected nutritional deficiency.

Results

When the patient was seen on the 2nd of December, 2023, treatment was associated with marked symptomatic and laboratory improvements. Blood urea was 115 mg /dL, serum creatine was 3.6 mg /dL, but he was still anemic with hemoglobin at 9.4 g/dL (Normal ranges: 11.5-16.5 g/dL). Therefore, a one week course of daily intramuscular iron dextran (100 mg daily) was prescribed. Serum calcium was 5.3 mg/dL (Normal ranges: 8-10.5 mg/dL). Therefore, oral alphacalcidol was added in a dose of 1 microgram daily (The dose to be adjusted as necessary according to serum calcium level).

Ultrasound imaging (Figure-1) showed reduction in renal size (RK: 9.6 x 4.5 cm, LK: 9.5 x 4.5 cm) [Adults male normal renal size is 10 x 9-14x13 cm] with increased parenchymal echotexture suggestive of bilateral parenchymal renal disease). Medullary pyramid thickness of both kidneys was 13 mm.

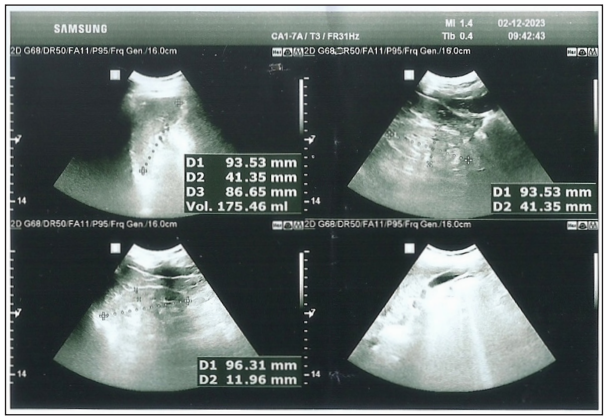

Figure 1A: Renal Ultrasound

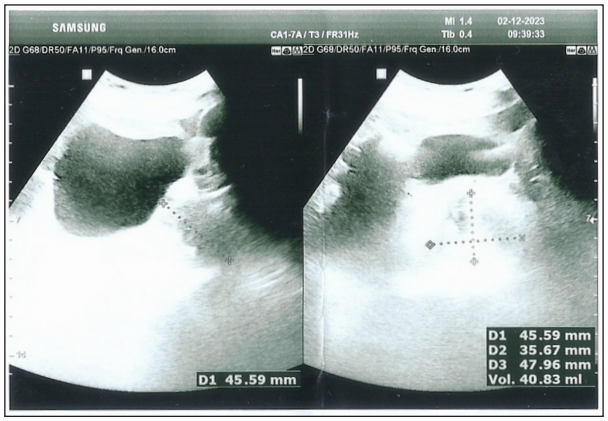

Figure 1B: Abdominal Ultrasound

There was no pelvicalyceal dilatation, but there were coarse crystals with the collecting system of both kidneys. Therefore, the patient received oral essential oil terpenes (Urinex) based on the evidence presented by Al-Mosawi AJ [14-17].

Ultrasound imaging also showed gaseous bowel loop, the spleen, pancreas, and gall bladder were normal in appearance, the common bile duct was not dilated (4 mm in diameter), and the main portal vein was not dilated. The liver was of normal size, but was showing mild fatty changes. Therefore, oral silymarin (Legalon) 75 mg once daily was prescribed based on the evidence provided by Buturova and colleagues, Luis [18,19].

The urinary bladder was normal and had normal bladder thickness (Pre-voiding volume was 150 ml, and the re-voiding volume was 4 ml, but the prostate was enlarged with smooth surface and a volume of 40.8 ml (Normal: 25 ml). Therefore, Oral finasteride was added.

Discussion

Obesity and diabetes are generally considered the most important risk factors for developing fatty changes in the liver [2]. Although, the patient in this report was not diabetic or obese, he had an ultrasound evidence of fatty changes in the liver. However, in 2015, Ludovico Abenavoli from Italy and his research team considered fatty liver that is not related to alcohol to be the most common liver disorder throughout the world [21].

Zobair Younossi from the United States and his international research group emphasized that although obesity is the major risk factor for the development of non-alcoholic liver disease, a large number of patients with the condition are not obese [22].

The lack of convenient and affordable therapy for chronic renal failure in many regions of the world should not mean should that the patients with advanced chronic renal failure are left without other suitable, convenient and acceptable care.

Therefore, the need for a more robust and more convenient therapy for chronic renal failure has been increasingly emphasized during the previous two decades. A novel urea lowering dietary therapy that could provide a novel paradigm for the management of chronic renal failure has been described. This new dietary therapy was used in combination with the traditional known therapies of chronic renal failure, and has been increasingly known as intestinal dialysis [1-3].

The use of a dietary material to increase extra-renal excretion and shift the urinary excretion of urea to the intestinal excretion has been increasingly called “Intestinal dialysis technology [23,24].

The clinical use of intestinal dialysis has been increasing reported as early as the 2000s, and was first endorsed the Ira Greifer (Figure-2), a pioneer of pediatric nephrology [1-3, 23-32].

Figure 2: Ira Greifer, a pioneer of pediatric nephrology

Introducing acacia gum which is a safe dietary fiber as a medicine for its urea lowering effect was first suggested in 2006, and its role in the management of chronic renal failure was emphasized [33-36].

Conclusion

Intestinal dialysis will continue to be used to improve the management of chronic renal failure and symptomatic uremia as long as there is no convenient and affordable therapy for chronic renal failure in many regions of the world.

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Conflict of Interest: None.

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