Current Status Of Implication Of The Clinical Practice Pattern In Hemodialysis Prescription In Regular Hemodialysis Patients In Egypt (Giza) Sector C

Protocol of Thesis

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By

Rasha Samir Mohamed Ghamery

M.B.B.CH-Cairo University

Under Supervision of

Prof. Dr. Adel Afify

Professor of Internal Medicine and Nephrology

Faculty of Medicine – Ain Shams University

Dr. Walid Ahmed Bichari

Lecture of Internal Medicine and Nephrology

Faculty of Medicine – Ain Shams University

Faculty Of Medicine
Ain Shams University
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Abbreviations

- AVF : Arteriovenous fistula
- Ca : Calcium
- CFU :Colony Forming Units
- CHOIR : The Correction of Hemoglobin and Outcomes in Renal Insufficiency
- CKD – MBD : Chronic Kidney Disease –Mineral and Bone Disease
- CKD : Chronic Kidney Disease
- CKD-EPI : Chronic Kidney Disease Epidemiology
- Cr : Creatinine
- CREATE : The Cardiovascular Risk Reduction by Early Anemia Treatment with Epoetin Beta
- DDS : Dialysis disequilibrium syndrome
- DM : Diabetes Mellitus
- DOPPS : Dialysis Outcomes and Practice Patterns Study
- ECG : Echocardiography
- eg : example
- eGFR : The estimated glomerular filtration rate
- EPO : Erythropoietin
- ESAs :Erythropoiesis-stimulating agents
- ESRD : End Stage Renal Disease
- FDA : Food and drug administration

- FGF-23 : Fibroblast Growth Factor 23
- g/l : gram per liter
- GIS : Gastrointestinal system
- HCT : Hematocrit
- HD : Hemodialysis
- Hg : Hemoglobin
- HIT : Heparin-induced thrombocytopenia
- IDH : Intradialytic Hypotension
- K : Potassium
- KDOQI : kidney Disease Quality Outcomes Initiative
- KIDIGO : Kidney Disease Improving Global Outcomes
- LMWH : Low molecule weight heparin
- M : Meter
- mAb :monoclonal antibody
- MDRD : Modification of Diet in Renal Disease
- ML :Milliliter
- Na : Sodium
- NKF : National Kidney Foundation
- NKF-K/DOQI : The National Kidney Foundation kidney Disease Quality Outcome Initiative
- PTH : Parathyroid Hormone
- RBC : Red Blood Cell

- RMP : Resting membrane potential
- SBP : Systolic Blood Pressure
- SCA : Sudden Cardiac Arrest
- SCD : Sudden cardiac death
- TREAT : Trial to Reduce Cardiovascular Events with Aranesp Therapy
- UF : Ultrafiltration
- UFH : Unfractioned heparin
- USRDS : United States Renal Data System
- USRDS :United States Renal Data Base
- VF : ventricular fibrillation
- VT : ventricular tachycardia

Introduction

Studies examining the link between research evidence and clinical practice have consistently shown gaps between the evidence and current practice. Some studies in the United States suggest that 30%-40% of patients do not receive evidence-based care, while in 20% of patients care may be not needed or potentially harmful. However, relatively little information exists about how to apply evidence in clinical practice, and data on the effect of evidence-based guidelines on knowledge uptake, process of care or patient outcomes is limited ***.(Locatelli et al., 2004)***

Appropriately then, the care of dialysis patients has been the prime focus of nephrology, particularly after the widespread availability of maintenance dialysis when it became evident that mortality of dialyzed patients was high and their quality of life far from adequate.***(Eknoyan et al,2002)***

Guidelines practiced on anemia and actual practices are much different with different places and patients according to treatment. Moreover, in individual countries and individual units within countries local circumstances relating to economic conditions; organization of health care delivery or even legal constraints may render the immediate implementation of best practice guidelines difficult or impossible. Nevertheless, they provide a goal against which progress can be measured***. (Locatelli et al., 2004)***

Compliance with clinical guidelines is an important indicator of quality and efficacy of patient care, at the same time their adaptation in

clinical practice may be initiated by numerous factors including; clinical experts, patient performance, constrains of public health policies, community standard, budgetary limitation and methods of feeding back information concerning current practice. ***(Cameron, 1999)***

End-stage renal disease (ESRD) is one of the main health problems in Egypt. Currently, hemodialysis represents the main mode for treatment of chronic kidney disease stage 5 (CKD5), previously called ESRD or chronic renal failure***.(Afifi,1999)***

Although hemodialysis is often used for treatment of ESRD, no practice guidelines are available in Egypt. Healthcare facilities are seeking nowadays to develop practice guidelines for the sake of improving healthcare services***. (Ministry of Health and Population,1999)***

AIM OF THE WORK

To study the pattern of current clinical practice in hemodialysis prescription in regular hemodialysis patients in Egypt and to compare this pattern with standard international guidelines in hemodialysis prescription, stressing on anemia, bone disease management and adequacy of dialysis.

Hemodialysis in Egypt

Egypt is made up of 25 governorates which reclassified into five groups. Cairo Governorate, which includes the capital, is both the most populous and the most urbanized part of Egypt. The other governorate groups arelocated in: Lower Egypt near the Mediterranean Sea, Upper Egypt which is the southern part of the country, the canal governorates that are located by the Suez Canal, and the border governorates which are away from the Nile valley ***(Afifi & Karim, 1999).***

End-stage renal disease (ESRD) is one of the main health problems in Egypt. Currently, hemodialysis represents the main mode for treatment of chronic kidney disease stage 5 (CKD5), previously called ESRD or chronic renal failure ***(Afifi & Karim, 1999).***

In Egypt, the estimated annual incidence of ESRD is around 74 per million and the total prevalence of patients on dialysis is 264 per million ***(Barsoum, 2002).*** Hemodialysis centers in Egypt exist in governmental, military, and university hospitals as well in the private sector.

Besides the fact that renal replacement therapy is still expensive for most patients with ESRD, data from government health insurance showed that the burden of dialysis significantly increased over time ***(Amin et al., 2012).***

The main hemodialysis regimen adopted in Egypt is three times per week. Most Egyptian centers are equipped with machines with controlled ultrafiltration and synthetic membranes. Many centers use bicarbonate buffer and high flux dialyzers although they are not universally applied ***(*Afifi & Karim,*1999).*** The hemodialysis centers, whether private or

governmental, are under supervision by the Egyptian Ministry of Health (MOH).

However, no Egyptian guidelines or approved guidelines to standardize the practice of hemodialysis are implemented in Egypt. Therefore, hemodialysis is not uniformly practiced across the different centers in Egypt. Adding to this, the practice of hemodialysis in some university centers; considered the highest level of care provision, showed no more than partial compliance with the international guidelines ***(Ibrahim, 2010).***

For patients with end-stage renal disease, renal replacement therapy is achieved by dialysis (hemodialysis or peritoneal dialysis) or kidney transplantation. Although true and complete replacement of renal function is not provided by dialysis, this modality removes metabolic wastes and excess body water, and replenishes body buffers in order to sustain life.

Although the life expectancy of patients with end-stage renal disease has improved since the introduction of dialysis in the 1960s, it is still far below that of the general population. As an example, according to the 2012 ESRDS report, the rate of all-cause mortality is 6.3 to 8.2 times greater for dialysis patients compared with the general population ***(Lionel et al., 2013)***.

Previously, one partial explanation for the poor survival in the United States was inadequate dialysis, since substantially higher survival rates have been reported in Europe and Japan even after case adjustment for age, sex, and renal diagnoses. Japanese patients, for example, have far fewer comorbid risk factors than those in the United States. However, it is more likely that factors such as older age, a higher prevalence of diabetes mellitus,

more comorbid conditions and inability to accurately capture severity of any noted comorbid disease are components of the higher dialysis mortality in the United States. This is particularly true as an increasing dialysis dose has been realized in the United States***. (Atlas of end stage renal disease in the United States., 2010)***

One of the highest survival rates has been reported from Tassin, France where patients are dialyzed 24 hours per week, much longer than in almost all other centers. This, and other observations, has led to a general increase in time in the dialysis prescription in the United States.

Indications for initiation of dialysis in chronic kidney disease:

The decision to initiate dialysis in a patient with chronic kidney disease (CKD) involves the consideration of subjective and objective parameters by the physician and the patient. There are no absolute laboratory values that indicate a requirement to begin dialysis. The decision is partly based on the patient's perception of his or her quality of life and anxiety about starting a complex, potentially life-long therapy, In addition, the nephrologist's perception about the patient's state of health, decline of kidney function, and potential hazards of therapy influence the timing of initiation of renal replacement therapy. In short, the decision of when to start dialysis is clearly one of the most difficult decisions that both the patient and the nephrologist must make***. (Lionel et al., 2013)***

There are a number of clinical indications to initiate dialysis in patients with CKD. These include ***(Pendse et al.,2007):***

1- Pericarditis or pleuritis (urgent indication)

2- Progressive uremic encephalopathy or neuropathy, with signs such as confusion, asterixis, myoclonus, wrist or foot drop, or, in severe cases, seizures (urgent indication)

3- A clinically significant bleeding diathesis attributable to uremia (urgent indication)

4- Persistent metabolic disturbances that are refractory to medical therapy; these include hyperkalemia, metabolic acidosis, hypercalcemia, hypocalcemia, and hyperphosphatemia

5- Fluid overload refractory to diuretics

6- Hypertension poorly responsive to antihypertensive medications

7- Persistent nausea and vomiting

8- Evidence of malnutrition

The first five of the above indications are potentially acutely life-threatening and should not be allowed to develop prior to initiation of dialysis in patients with known CKD under medical care. The last two develop more insidiously and can also be due to other comorbidities or drug effects. They are no less dangerous**.**

(Steven et al., 2013)

Relative indications :

Since an important goal of dialysis is to enhance the quality of life as well as to prolong survival, it is therefore important to consider less acute indications for dialysis such as

1- Anorexia and nausea

2- Impaired nutritional status

3- Increased sleepiness

4- Decreased energy level, attentiveness, and cognitive tasking.

Unfortunately, the expressions of these signs and symptoms are variable in patients with slowly progressive renal disease. The following are some of the factors that may contribute to this variability.

• Some patients accommodate to these symptoms and downgrade their sense of well–being as renal failure progresses.

• Many of the medications given to patients with CKD have side effects that mimic uremic symptoms. As examples, oral iron therapy often leads to nausea and centrally-acting antihypertensive drugs can induce drowsiness independent of the degree of renal failure.

These factors illustrate the need to identify more objective markers of renal failure to lessen the subjective component of the decision to initiate dialysis**.**

(Steven et al., 2013)

QUANTITATIVE MEASUREMENTS OF END-STAGE RENAL DISEASE

The two most widely evaluated quantitative measurements of end-stage renal disease have been estimation of the glomerular filtration rate (GFR) and assessment of nutritional status.***(Steven et al., 2013)***