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Current Status of the Implication of the Clinical Practice Pattern in Hemodialysis Prescription in Regular Hemodialysis Patients in Egypt (Alsharqia)

Thesis

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Mohammed Mahmoud Ali

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List of Abbreviations

Abbreviation	Name
ESRD	End-stage renal disease
EPO	Erythropoietin
Hgb	Hemoglobin
GFR	Glomerular filteration rate
HD	Hemodialysis
CKD	Chronic kidney disease
PD	Peritoneal dialysis
DOQI	Dialysis Outcomes Quality Initiative
ESA	erythropoiesis-stimulating agents
HMW-ID	high molecular weight iron-dextran
LMW-ID	low molecular weight iron-dextran
IL-6	interleukin 6
BMP-6	bone morphogenetic protein 6
TNF	tumor necrosis factor
MBD	mineral and bone disorder
PTH	parathyroid hormone
CV	cardiovascular
SHPT	secondary hyperparathyroidism

DM	diabetes mellitus
IDH	intradialytic hypotension
SBP	Systolic blood pressure
HES	Hydroxyethyl starch
HTN	Hypertension
RAAS	rennin-angiotensin aldosterone system
ACE	angiotensin converting enzyme inhibitors
ARB	angiotensin receptor blockers
MI	myocardial infarction
cTnT	Cardiac troponin T
DDS	Dialysis Disequilibrium syndrome
HIT	heparin-induced thrombocytopenia
LMWH	low molecule weight heparin
UFH	unfractioned heparin

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INTRODUCTION

Even though dialysis treatment is successful to ameliorate many of the clinical manifestations of the end stage renal disease (ESRD) and to postpone otherwise imminent death, dialysis patients still have higher mortality and hospitalization, as well as lower quality of life, compared with general population. The available clinical data have also shown that the overall mortality rate and outcomes vary substantially across facilities and countries***(Lopes et al.,2007).***

The observed variation in mortality across centers and countries raises the possibility that practices pattern may contribute to the variation in outcome. Also, the outcomes of dialysis patients can be modified by change in dialysis practice, suggesting that there is an association between practice pattern and outcome. Indeed, the dialysis outcomes and practice pattern study(DOPPS),initially performed in dialysis facilities from seven developed countries and now twelve ones, have greatly improving our understanding of dialysis practices that are associated with better outcomes***(Tentori et al.,2008)***.

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. ***(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 backinformation 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

Tostudy the pattern of current clinical practice in hemodialysis prescription inregular 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

Fifty years ago, Belding Scribner and hiscolleagues at the University of Washingtondeveloped a blood-access device using Teflon-coatedplastic tubes, which facilitated the use of repeated hemodialysis as a life-sustaining treatment for patients with uremia.The introduction of the Scribner shuntas it became known, soon led to the development of a variety of surgical techniquesfor the creation of arteriovenous fistulas and grafts. Consequently, hemodialysis hasmade survival possible for more than a million people throughout the world whohave end-stage renal disease (ESRD) with limited or no kidney function. The expansion of dialysis into a form of long-term renal-replacement therapy transformed thefield of nephrology and also created a new area of medical science, which has beencalled the physiology of the artificial kidney***(Scribner et al.,1960).***

Goals of Hemodialysis:

Dialysis is defined as the diffusion of molecules in solutionacross a semipermeablemembrane along an electrochemical concentration gradient.The primary goal of hemodialysis is to restore the intracellular and extracellular fluid environment thatis characteristic of normal kidney function. This is accomplished by the transportof solutes such as urea from the blood into the dialysate and by the transport of solutes such as bicarbonate from the dialysate into the blood. Solute concentrationand molecular weight are the primary determinants of diffusion rates.Small molecules, such as urea, diffuse quickly, whereas compartmentalized and larger molecules, such as phosphate, β2-microglobulin, and albumin, and proteinboundsolutes, such as p-cresol, diffuse much more slowly. In additionto diffusion, solutes may pass through pores in the membrane by

means of aconvective process driven byhydrostatic or osmotic pressure gradients a process called ultrafiltration. During ultrafiltration, there is no change in solute concentrations;its primary purpose is the removal of excess total body water. ***(Himmelfarb and Ikizler, 2010)***

For each dialysis session, the patient's physiological status should be assessed so that the dialysis prescription can be aligned with the goals for the session. Thisis accomplished by integrating the separate but related components of the dialysis prescription to achieve the desired rates and total amount of solute and fluid removal. By replacing kidney excretory function, dialysis is intended to eliminatethe symptom complex known as the uremic syndrome, although ascribingparticular cellular or organ dysfunction to the accumulation of specific solutes in uremia has proved to be difficult***(Locatelliet al.,2002).***