

**Clinical Practice Pattern in Anemia
Management in Hemodialysis Patients
in El Minia Governorate**

Thesis

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Internal Medicine**

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لدي مرضي الأستصفاء الدموي في محافظة
المنيا

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Contents

Introduction	1
Aim of The Work	4
Review Of Literature	
• Chapter 1: Causes and Consequences of anemia in HD patients	5
• Chapter 2: Epidemiology of anemia in renal failure	14
• Chapter 3: Management of anemia according to KDIGO 2012	19
Patients and methods	37
Results	44
Discussion	73
Summary and conclusion	82
Recommendations	86
References	87
Arabic Summary	1

List of Figures

No	Title	Page
Figure (1):	Center share	46
Figure (2):	Age in the study population	48
Figure (3):	Sex in study population	48
Figure (4):	Dependancy status in the study population	49
Figure (5):	Work status in the study population	49
Figure (6):	Different Etiology in the study population	51
Figure (7):	Different comorbidities in the study population	52
Figure (8):	Frequency of HD sessions/week in the study population	55
Figure (9):	Type of vascular access in the study population	55
Figure (10):	Frequency of access failure in the study population	56

Figure (11):	Sponsoring status in the study population	56
Figure (12):	Types of anticoagulation use in the study population	57
Figure(13):	Viral status in the study population	57
Figure (14):	Type of dialysate used in the study population	58
Figure (15):	HB testing	59
Figure (16):	Iron status testing	60
Figure (17):	History of blood transfusion in the study population	62
Figure (18):	History of vitamins use in the study population	63
Figure (19):	History of L-carnitine use in the study population	63
Figure (20):	History of iron injection in the study population	64
Figure (21):	Ferritin levels in the study population	67

Figure (22):	TSAT category in the study population	68
Figure (23):	Hemoglobin category in the study population	70
Figure (24):	Types of complications during HD session in the study population	72

List Of Tables

No	Title	Page
Table (1):	Main HD units & no. of patients	45
Table (2)	Base line characteristics of study population	47
Table (3):	Etiology of HD & associated co morbidities	50
Table (4):	HD data	52
Table (5):	Frequency of testing over 6 months	59
Table (6):	Treatment of anemia	61
Table (7):	Iron profile testing	65
Table (8):	Ferritin levels in the study population	66
Table (9):	TSAT category in the study population	67
Table (10):	Hemoglobin category in the study population	69
Table (11):	Types of complications during HD session in the study population	71

List of Abbreviations

AV	Arteriovenous access
BP	Blood pressure
CKD	Chronic kidney disease
CRP	C- reactive protein
CVC	Chronic venous catheter
CVD	Cardiovascular disease
DM	Diabetes mellitus
DOPPS	Dialysis outcome and practice pattern study
ERA-EDTA	the European Renal Association-European Dialysis and Transplantation association
ESRD	End stage renal disease
GFR	Glomerular filtration rate
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HD	Hemodialysis

HDF	Hemodiafiltration
HF	Hemofiltration
HTN	Hypertension
IPD	Intermittent peritoneal dialysis
K/DOQI	Kidney Disease Outcome Quality Initiative
KDIGO	Kidney disease improving global outcomes
MOH	Ministry of health
NKF	National Kidney Foundation
PEM	Protein energy malnutrition
RRT	Renal replacement therapy
UF	Ultrafiltration

Introduction

Anemia is highly prevalent in hemodialysis(**HD**) patient with high morbidity and mortality risk. The management of renal anemia has been revolutionized over the last 15 years after ' recombinant human erythropoietin ' was introduced in 1989 , which replaced blood transfusion as the main treatment of this complication (*Cameron, 1999*).

In recent years; specific clinical guidelines have been developed to optimize the quality of anemia management secondary to chronic kidney diseases (CKD).As a result; the National Kidney Foundation Kidney Disease Outcome Quality Initiative (K\DOQI) guidelines and the Renal-European Dialysis and Transplantation Association best practice guidelines have been published in USA & Europe . Therefore; clinical practice guidance help individual physician and physicians as group to improve their clinical performance and thus raise standard of patient care towards optimum levels, They may also help to insure that all institution provide an equally good base line standard of care (**Cameron,1999**).

Guidelines practiced on anemia and actual practice 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*).

Dialysis Outcomes and Practice Patterns Study (DOPPS) has observed a large variation in anemia management among different countries .The main hemoglobin concentration in hemodialysis patient varied widely across the studied countries ranging between 8 g/dl to 11 g/dl .The percentage of prevalent hemodialysis patient receiving Erythropoietin stimulating agent ' ESA' has increased from 75% to 83% .The percentage of HD patient receiving iron varies greatly among DOPPS countries range from 38% to 89% (*Locatelli et al, 2004*) .

There are challenges in implanting clinical guidelines in medical practice Overall DOPPS Data which show that, despite the availability of practice guidelines for treatment of renal anemia wider variation in anemia management exists as gap between what is recommended by the guidelines and is accomplished in everyday clinical practice. Compliance with clinical guidelines is an importance indicator of quality and efficacy of patient care at the same time their adaption in clinical

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

Aim of work

To study the pattern of current clinical practice in anemia management in hemodialysis patients in ELMINIA Governorate and to compare this Pattern with standard international guidelines in anemia management in K/DIGO ,2010.

Chapter 1

Causes and Consequences of anemia in HD patients

Definition of Anemia:

Anemia, as defined by the NKF, is a Hemoglobin (Hb) concentration < 12 g/dl for women and < 13.5 g/dl for Men (NKF 2006).

Conversely, the European Best Practices Guidelines for the Management of Anemia in Patients with Chronic Renal Failure defines anemia according to age and sex. Anemia is defined as an Hb concentration of < 11.5 g/dl in women, < 13.5 g/dl in men ≤ 70 years of age, and < 12 g/dl in men > 70 years of age (NKF 2007). Regardless of the definition, anemia is a common complication associated with CKD.

1- Etiology of Anemia:

The anemia of CKD is primarily due to insufficient production of erythropoietin (EPO). Although EPO can be produced in many of the body's tissues, EPO required for erythropoiesis is generally produced by endothelial cells in proximity of the renal tubules (*Khoury et al, 1998*). The erythropoietin receptor is expressed primarily on the surface of
