Research Article

Correlation between parathormone level and anemia in chronic hemodialysis patients

Osama K. EL-Minshawy, Ali M. El-Shrief and Sandy M. Ayad
Department of Internal Medicine, El-Minia Faculty of Medicine

Abstract
Introduction: HD means a process for removing waste products and excess water from the blood and is used primarily as an artificial replacement for lost kidney functions in people with kidney failure (Cozzollino et al., 2010). **Aim of the work:** Study the level of PTH in chronic HD patients, its relation to anemia and outcome of anemic patients after treatment of increased PTH level. **Patients and Methods: Patients:** This study was a cross sectional study of the role of PTH in ESRD and its correlation with Hb level in the participants recruited from the HD unit. The study enrolled seventy (70) patients with ESRD and on chronic HD. They were selected randomly according to inclusion criteria three days per week.
Keywords: parathormone level, anemia, chronic hemodialysis

Introduction
HD means a process for removing waste products and excess water from the blood and is used primarily as an artificial replacement for lost kidney functions in people with kidney failure [(1)].

HD may be used for those with an AKI or progressive chronic kidney disease stage 5 which is called ESRD. The latter form develop over months or years and irreversible but in contrast to AKI which is usually reversible, HD is regarding as "holding measure" until kidney transplant can be performed or sometimes as the only supportive measure when transplant would be inappropriate [(2)].

In CKD there is decreased renal excretion of phosphate and diminished production of calcitriol 1,25 dihydroxyvitamin D (calcitriol increases serum calcium level) the increased phosphate and reduced calcium lead to secondary hyperparathyroidism [(3)]

Anemia is the main character for CKD because of uremia there is decrease in appetite also there is bleeding tendency and the main secretory function of the kidney is EPO which stimulate erythropoiesis, in CKD erythropoietin not secreted which is the main cause of anemia[(5)].

Over secretion of PTH has direct effect on EPO synthesis, bone marrow progenitors and red cell survival, indirect effect by bone marrow fibrosis. It is noticed that control of hyperparathyroidism increases endogenous EPO production or improves the response to EPO in chronic HD patients [(6)].

Aim of the work
Study the level of PTH in chronic HD patients, its relation to anemia and outcome of anemic patients after treatment of increased PTH level.

Patients and Methods
Patients:
This study was a cross sectional study of the role of PTH in ESRD and its correlation with Hb level in the participants recruited from the HD unit.

The study enrolled seventy (70) patients with ESRD and on chronic HD. They were selected randomly according to inclusion criteria three days per week.

Inclusion criteria:
The patients who participated through this period and their investigations were complete.

They were divided into 3 groups as follow:
1- Kidney patients on chronic HD and have anemia.
2- Kidney patients on chronic HD and have secondary hyperparathyroidism.
3- Kidney patients on chronic HD and have both anemia and secondary hyperparathyroidism..

Exclusion criteria:
- Patients receiving ACEIs and ARBs also patients with external blood loss.

Methods:
Patients are subjected to the following:
1- Through history taking and clinical examination.
2- Through laboratory data.

Results

Table: Etiology of chronic kidney disease

Etiology	Group 1 N=30	Group 2 N=20	Group 3 N=20	Total N=70	P
• Un known	11(36.7%)	2(10%)	5(15%)	18(25.7%)	
• Diabetic nephropathy	4(13.3%)	6(30%)	9(45%)	19(27.1%)	
• Hypertensive nephropathy	4(13.3%)	3(15%)	3(15%)	10(14.2%)	
• SLE	5(16.7%)	0	1(5%)	6(8.6%)	0.048*
• Cardio-renal	0	1(5%)	0	1(1.4%)	
• Cirrhotic liver	2(6.7%)	0	0	2(2.8%)	
• Others	3(10%)	5(25%)	7(35%)	15(21.4%)	

As shown from table there is statistically significant difference regarding the etiology between groups.

Unknown etiology was in about one third (36.7%) of 1st group, 10% in 2nd group and 15% of the 3rd group. Diabetic nephropathy represent the main etiology as it was 13.3%, 30% and 45% of the etiology in 1st, 2nd and 3rd groups respectively which is totally 27.1% in the three groups. Hypertensive nephropathy represent 13.3% in 1st 0group and 15% in 2nd and 3rd groups. While SLE represent the cause in 16.7% of 1st group and 5% in 3rd group. Cardio-renal causes present in 5% of 2nd group. Cirrhotic liver present in 6.7% of 1st group. Other causes represent 10% of 1st group, 25% of 2nd group and 35% of 3rd group.

Discussion

Secondary hyperparathyroidism as well as anemia are common complications of CKD. In this study, a significant association was found between PTH and Hb level, which is consistent with the findings[7].

In our study, we evaluate the correlation between Hb and PTH level in patients of chronic HD; they were selected through the period of three months from October 20174to December 2017[8].

We determine common complications of CKD for better treatment of anemia and hyper-parathyroidism and improvement of general conditions in patients on chronic HD.

Recommendations

1- Routine investigations of hemoglobin and PTH level in patients on chronic HD are very important.
2- Nephrological consultation for early detection and proper management of secondary hyperparathyroidism so we can decrease the severity of anemia that affects general conditions of chronic HD patients.
3- We should tell our patients about manifestations of both anemia and secondary hyperparathyroidism for rapid consultation.
4- Large study should be done to detect the prevalence of anemia and hyperparathyroidism in patients of chronic HD.

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