

THE RELATIONSHIP BETWEEN VITAMIN D CONCENTRATION AND SOME BIOCHEMICAL PARAMETERS IN PATIENTS SUFFERS FROM VITAMIN D DEFICIENCY AT KIRKUK CITY

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ABSTRACT : Vitamin D is a fat-soluble steroid hormone. It is the only form produced cutaneously while exposure of plants steroids and ergosterol to UV lights forms Vit D₂, also it obtained from foods or by synthesis in the skin after sunlight exposure (Ultraviolet rays) and converted to the active form in the liver and kidneys. The aim of this study is to find and to prove the relationship between vitamin D and some chemical parameters. Use Chemiluminescence Immunoassay System (CL-1000i - Mindray) for PTH and vitamin D analysis, while other parameter's (Alkaline phosphatase, Calcium and phosphorus) use Clinical Chemistry Analyzer (BS-240 Mindray). This study showed a significant deference between vitamin D and Alkaline phosphatase, which is represented inverse relationship. Simple differences has been found in other parameters, but not significant differences, while others did not show any differences.

Key words : Biochemical parameters, vitamin D, chemiluminescence immunoassay system, sunlight exposure.

INTRODUCTION

Vitamin D is a fat-soluble steroid hormone. Is the only form produced cutaneously while exposure of plants steroids and ergosterol to UV lights forms Vit D₂, also it obtained from foods or by synthesis in the skin after sunlight exposure (Ultraviolet rays) and converted to the active form in the liver and kidneys (McCarty *et al*, 2013). Vitamin D deficiency (<20 ng/mL), leads to defective bone mineralisation and decreased bone mineral content (Kota *et al*, 2013). The deficiency is rising in correspondence with increasing exclusive breastfeeding rates, breast milk being a poor source of vitamin D and inadequate vitamin D supply would imply defective bone mineralization (Streym *et al*, 2015; Leerbeck and Søndergaard, 1980). Its prevalence in term healthy breastfed infants has been reported variably as 20-82% in various studies (Dawodu *et al*, 2003 and Wagner *et al*, 2010). Breast milk contains 15-50 IU/L vitamin D, which is insufficient to meet the needs of neonates (Streym *et al*, 2015; Leerbeck and Søndergaard, 1980). It was felt that there is a requirement of Indian studies in the matter given that the handling of vitamin D in the body differs in the people of different races, colour and ethnicity. The presence of dark skin, decreased activity of 25(OH) hydroxylase (an enzyme involved in the synthesis of an active form of vitamin D) in Asian population lack of fortification policies in India predispose mothers and their

infants to vitamin D deficiency (Sachan *et al*, 2005).

Parathyroid hormone (PTH) and vitamin D are major regulators of mineral metabolism and form a tightly controlled feedback cycle; PTH stimulates 1,25-dihydroxy vitamin D synthesis, which in turn exerts a negative feedback on the parathyroid glands (Metzger *et al*, 2013 and Khundmiri *et al*, 2016). Parathyroid hormone is synthesized by the parathyroid gland and maintains the short-term homeostasis of ECF-Ca²⁺ through its effects on the kidney (increased calcium re-absorption) and mobilization of calcium from the labile bone pool. A more sustained response is produced through the regulation of the renal production of 1,25(OH)₂D (Parfitt, 1987). Parathyroid hormone is the major regulator of 1,25(OH)₂D production, although serum calcium and serum phosphate also affect its production. The homeostasis of extracellular ionized plasma calcium (ECF-Ca²⁺) is tightly regulated by a number of hormones, of which parathyroid hormone and vitamin D play a major role (Fig. 1).

Alkaline phosphatase is a membrane bound enzyme which occurs in almost all living organisms. Residues involved in the active site of the enzyme and the ligands coordinating the two zinc atoms and the magnesium ion are conserved; thus, the catalytic mechanism is considered to be similar in prokaryotic and eukaryotic APs, but Mammalian APs have low sequence identity