

Effects of Serum Phosphorus Level among Diabetic Patients of Koshi- Zone: A Study with 0-5yrs. / 5-10 Yrs / 10-15 Yrs / & More than 15 Yrs. Old Diabetic Patients

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Abstract: *Monitoring of Phosphate serum concentration among Diabetic Populations of Koshi Region-Bihar has not been seen in general, probably with a perception that this mineral is sufficiently taken by the public/Patients through their dietary intake and further any mild to moderate hypophosphatemia can be well tolerated & moreover it is strongly believed that the minerals (PO₄) is prominently essential for the Bone Mineralization and not that much necessary for its role in Diabetes or its complications management. Whereas the Present study in considerations of its essential role in cells energy productions and its ability to enhance the ability of oxygen to carry more haemoglobin along with its participation in the functions of R.N.A/D.N.A & MITOCHONDRIAL Function and its linked with N.A.D.P/G.T.P & ATP, would be able to proof it that the lack of monitoring of Phosphate level among diabetic Patients would be considered as a Pitfall in the treatment/management of Diabetes Patients and adhering the same may be helpful for the Patients to slower down the Development of Diabetic Complications of any type considering its important role in cells energy productions. There is no any problem to understand it that for the functions of the cells an adequate energy is the utmost requirement & if it is not so we may expect an improper/alterd functions of our cells, which finally leads to the development of Diabetic Complications more rapidly, because of the lack of the cellular energy which pull up the conditions of Metabolic Dysfunctions in finality. A correlation of deficiency of Phosphate with age of Diabetes has to be established and expected to be found that the more deficiency would be observed among those Patients, who have more period of time as a diabetic Patient. Keeping the Diurnal Variations in view the time of collections of sample for both Control groups and Group of Diabetic Patients as {0-5 yrs /05-10yrs/ 10-15yrs and more than 15 yrs. Of Diabetic Patients group) would be kept as 3-0'clock in the afternoon on daily basis for Research Purposes, with due consent of patients/public. As a conclusion it has been concluded & strongly presumed that the monitoring of Phosphate level is very- very essential among the Diabetic Patients to prevent themselves from the complications of Diabetes and further make its development (complications of Diabetes) very slower. Aim & Objective of this Study: To make the clinician aware with the data,s of Research- so that accordingly the patients may get benefited in terms of their treatment of either in a condition with Hyper or Hypo- Phosphate along with other complications of Diabetes. Further the reference range for Phosphate I.e 3.4 to 4.5mg/dl has to be re-examined in terms of the local Patient with effect of collection of sample by 3oclock in the afternoon in comparison to control groups.*

Keywords: Hypo phosphate/Oxidative-Phosphorylation/Glycolysis/type-1&11 Diabetes/Diurnal changes in phosphate/N.A.D.P-GTP-& ATP2 & ATP-3/Cellular Process & energy

1. Introduction

Diabetes specifically type -2 Diabetes is found to be prevailed like anything among the societies and peoples are also encountered with the complications of Diabetes, subsequently after they are diagnosed to type-2 Diabetes & even after getting the treatment as well having good glycemic control.

It is strongly presumed that only in absence of the good glycemic control, the complications or such other problems may get arise, but it has been seen and observed in the region among the Diabetic Patients, that in many of the cases, instead of having good glycemic index, the patients are facing and becomes witnesses of Diabetic complications as well feeling non-energetic and lethargic & in contrary to the above, it has been noticed, in many of the cases, that, even having hyperglycemia followed with a prolonged period, the patients are not facing any complications, nor, becoming witnesses of weakness and any kind of others problem- .etc.

For the above instant two conditions (which are contrary to each other, in terms of general perception among the medical fraternity) one possible causes prominently, can be presented as the process of hydrolysis by which the poly & Disaccharide are converted into monosaccharide- glucose, the least molecule of sugar in general Glucose is only estimated to define Patients condition in terms of Sugar to judge as to whether anyone have more/less or an adequate amount of sugar and it is non-avoidable to consider that the enzymes i.e diastase and invertase are secreted from the G.I Tract, at different level & alteration in the same may altered the process of hydrolysis and definitely may proof that to define the sugar status of a person, only the Glucose estimation is not enough, as the others sugar are not known to us under the same circumstances and therefore the clinical manifestations of the patients concerns also comes under the question of circle.

The another possible reason seems to be the conditions of Hypo-phosphate (Except hyper-phosphate in Diabetic -keto

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Acidosis under which People may encountered with the diabetic complications, accompanied by weaknesses & lethargic- .etc.

Phosphorus is a very essentials minerals important for the enzymatic reactions & cellular Processes alike glycolysis/Ammonia genesis and Oxidative Phosphorylation, which mainly converts ATP-2 into ATP-3 to get heat and subsequently more energy. The process of Glycolysis at the end generated energy for human body to work and moreover Phosphorus is playing an important role in the functions of Mitochondrial/ R.N.A & D.N.A. As has been proved that almost 85% of the total phosphorus is found in the skeleton muscles and rest 15% in the soft tissues. A decreased level of phosphorus invite a conditions of insulin Resistance therewith and bring the patients into a conditions of metabolic dysfunctions, due to the lack of an adequate cellular processes and deficiency of Glycolysis also trigger the feelings of non-energetic and lethargic among the patients.

There are four possible mechanism I.e dietary intake/ G.I diseases/Renal handling, along with prolonged starvation disorders of phosphorus may take place. Phosphate is absorbed throughout the entire intestine, but the major site is the jejunum and thereafter duodenum and ileum. Therefore, poor dietary intake, specially when there is a Gastrointestinal issues the hypophosphatemia is expected, further it is also expected with its trans cellular shift to soft tissues or to bones. Further the hypophosphatemia is expected in increased renal excretion of phosphorus.

Association of Hypophosphatemia with Diabetic Complications of any kind:

To maintain the biological function very adequately the cells required energy in constant manner to make them alive and functional in proper manners & very prominently Mitochondrial functions are producing almost 95% of the energy required for the functions of the cells, which in turn participate in the breakdown of nutrients into energy a process called mitochondrial oxidative phosphorylation & stored the energy in form of ATP.

Mitochondrial functions also play a role in the synthesis of metabolic precursors, calcium regulation, the production of reactive oxygen species, immune signaling, and apoptosis. Therefore Dysfunction in mitochondrial function obviously is associated with various diseases, including metabolic syndrome, neuronal diseases, cancer, cardiovascular and infectious diseases, and inflammatory disorders.

The above facts which has been already established clearly manifested that the functions of Mitochondria is greatly linked with the functions of cells and improper functions may lead the conditions as a diseases as mentioned above to this instant para. As understood the phosphorus is the essential one for the Mitochondrial functional activity and hence any alterations in the Phosphorus may lead to the alterations in the function of

Mitochondria, which are co- linked with all Carbohydrate/Fat and Protein Metabolism.

Keeping the above facts in consideration the assessment/estimations of Phosphate among the Diabetic Populations becomes an utmost need, which in finality leads to bring the attention of the treating clinician to be more careful onto this for their necessary action that too with a new reference range derived for the local diabetic Patients, after the completion of the Research work.

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