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Glycerophosphate is interchangeable with inorganic phosphate in terms of safety and serum pharmacokinetics

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The aggressive replacement of phosphate in patients presenting with hypophosphatemia is unnecessary in most cases. However, for ventilated subjects with moderate levels of phosphate in serum, for patients with severe hypophosphatemia (<0.3 mmoL/L), and for cancer- or critically ill patients requiring total parenteral nutrition (TPN) for extended periods, the intravenous supplementation of phosphate can be of significant importance. In these subjects, hypophosphatemia is easily overcome by use of phosphorus additives either as inorganic sodium phosphate or glycerophosphate. While TPN solutions are frequently enriched with pure sodium phosphate in the US, glycerophosphate is utilized in ready-to-use TPN emulsion solutions for intravenous administration in Europe. To date, however, several TPN emulsion preparations are currently not approved in the US due to the limited availability of PK- and safety data related to their sodium glycerophosphate content. Although, glycerophosphate was shown to be safe in earlier studies in critically ill and children, there is still circumstantial uncertainty about its safety and PK profile in serum, if the drug is given in combination with essential components of TPN solutions such as amino-acids, fats, glucose and electrolytes.

Against this background, we carried out the present study to measure and compare the PK profiles of inorganic phosphate in serum and urine following intravenous administration of the two investigational formulations. Additionally, total calcium, sodium, potassium in serum and urine as well as serum levels of potential surrogate markers of phosphate homeostasis such as PTH and calcitonin were compared in both treatment groups.

Biography

Dr. Joukhadar earned his M.D degree at the age of 25 years from the Medical University of Vienna. At present, he is affiliated with the Beth Israel Deaconess Medical Center, Boston MA, and the Harvard Medical School, Boston, MA. He is also the chief executive officer of J&P MEDICAL RESEARCH Ltd., an independent international research institute, basically operating according to the public-private-partnership concept. He has published more than 125 papers in highly reputed medical journals, 10 book chapters and is serving as an editorial board member in more than 7 medical or pharmaceutical peer-reviewed journals.