

Pediatrics Health 2020: Protein energy wasting in a sample of Egyptian children on regular hemodialys Relation to anorexigenic hormones - Ghada M. El Kassas - National Research Centre

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Protein energy wasting (PEW) and growth retardation are common problems in pediatric patients with chronic renal failure (CRF). Disturbances in anorexigenic/orexigenic hormonal balance may be key in the pathogenesis of PEW in CRF children. Patients with chronic kidney disease are at extensive hazard for malnutrition, categorized by protein energy wasting and micronutrient deficiency. Studies show a great prevalence amount of malnutrition in both children and adults with chronic kidney disease. Separately from abnormalities in growth hormone-insulin like growth factor axis, malnutrition also plays a role in the development of stunted growth, commonly observed in children with chronic kidney disease. The pathogenic mechanisms of malnutrition in chronic kidney disease are complex and involve an interplay of multiple pathophysiologic alterations including decreased appetite and nutrient intake, hormonal derangements, metabolic imbalances, inflammation, increased catabolism, and dialysis related abnormalities. Malnutrition increases the risk of morbidity, mortality and overall disease burden in these patients. between nutrient requirement and intake resulting in cumulative deficits of energy, protein or micronutrients that may negatively affect growth, development and other relevant outcomes". This definition assumes a state of undernutrition, which constitutes protein energy wasting and micronutrient deficiency. For the purposes of this review, the term malnutrition refers to nutrient deficiency and undernutrition. Malnutrition is prevalent in both developing and developed countries, and is an important risk factor for morbidity and mortality. Unlike in developing countries where malnutrition is linked to poor socioeconomic conditions, malnutrition in the developed countries typically occurs in the context of acute or chronic illness. While acute illness primarily affects weight, chronic illness impacts linear growth. Children with chronic kidney disease (CKD) are often stunted and malnutrition is recognized as a key player in the development of growth failure in this patient population. Depending on the clinical parameters used to define malnutrition, a prevalence of 20–45% has been reported in various studies in children with CKD. Using the subjectiv The American Society for Parenteral and Enteral Nutrition defines malnutrition as "an imbalance between nutrient requirement and intake resulting in cumulative deficits of energy, protein or micronutrients that may negatively affect growth, development and other relevant outcomes". This definition assumes a state of undernutrition, which constitutes protein energy wasting and micronutrient deficiency. For the purposes of this review, the term malnutrition refers to nutrient deficiency and undernutrition. The American Society for

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Aim of Work: In this study we investigated the association between serum unacylated ghrelin and obestatin (two hormones involved in energy balance and the nutritional status in a group of Egyptian children with CRF on regular hemodialys.

Subjects & Methods: This case–control study was conducted on fifty CRF children on regular hemodialysis aged (7-15years) who recruited from Nephrology department, Pediatric Hospital, Ain Shams University. Forty age and sex matched healthy children were included as a controls. Full history taking, clinical examination and anthropometric measurements were done. Standard deviation score (SDS) for all measurements were calculated. BMI-SDS, waist-hip ratio (WHR), the percentage of fat mass (FM%) and fat-free mass (FFM%) were calculated. Hemoglobin level, serum urea, creatinine, glucose, cholesterol, triglyceride, HDL, ghrelin and obestatin were measured. Glomerular filtration rate (GFR), the homeostatic model assessment–insulin resistance (HOMA-IR) and LDL were calculated.

Results: Serum unacylated ghrelin and obestatin levels were markedly higher in cases than controls ($p < 0.001$). Serum unacylated ghrelin and obestatin positively associated with urea and creatinine, and inversely associated with GFR in hemodialysed children ($p < 0.001$). Obestatin level negatively associated with BMI SDS-score ($p < 0.01$). Unacylated ghrelin negatively associated with weight SDS-score ($p < 0.04$), BMI SDS-score ($p = 0.03$) and percentage fat mass ($p < 0.05$).

Conclusion: We concluded that measurement of unacylated ghrelin and/ or obestatin is fundamental in hemodialysed children, as both hormones are inversely related to renal function and can be used as an excellent biomarker of nutritional status in hemodialysed children.

Key Words: Hemodialysed children, PEW, Ghrelin, Obestatin