Endocrinología, Diabetes y Nutrición

177 - HSA-MIR-199B-5P AS A BIOMARKER OF BONE FRAGILITY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

M.D. López Robles[1], L. Martínez Heredia[1], R. Sanabria de la Torre[2], F.L. Andújar Vera[1], G. Ferrero[3], A. Naccarati[3], M. Muñoz Torres[4], B. García Fontana[5] and C. García Fontana[5]

[1]Instituto de Investigación Biosanitaria de Granada. [2]Departamento de Bioquímica y Biología Molecular III e Inmunología, Universidad de Granada. [3]Italian Institute for Genomic Medicine (IIGM). [4]Departamento de Medicina, Universidad de Granada. [5]Unidad de Endocrinología y Nutrición, Hospital Universitario Clínico San Cecilio, Granada.

Resumen

Introduction: Type 2 diabetes mellitus (T2DM) is associated with increased bone fragility and fracture risk. However, early diagnostic tools for musculoskeletal complications are lacking. Circulating microRNAs (miRNAs) have emerged as promising biomarkers for metabolic and bone-related diseases.

Methods: Serum samples from 8 T2DM patients and 8 matched healthy controls were analyzed by next-generation sequencing, followed by RT-qPCR validation. Associations between selected miRNA expression and bone-related clinical parameters were evaluated by correlation analysis.

Results: Among the miRNAs analyzed, hsa-miR-199b-5p was significantly under-expressed in T2DM patients. This reduction was more evident in those with low trabecular bone score (TBS) and decreased bone mineral density (BMD). Significant positive correlations were observed between hsa-miR-199b-5p and cortical/trabecular volumetric BMD, as well as serum periostin. In contrast, negative correlations were found with hip fracture risk (FRAX), TBS-adjusted FRAX, and serum CTX, all markers of bone fragility.

Conclusions: Our findings suggest that decreased serum levels of hsa-miR-199b-5p are associated with reduced bone quality and increased fracture risk in T2DM patients. These results support its potential utility as a biomarker for early detection of skeletal complications. Based on previous studies, hsa-miR-199b-5p may influence bone metabolism through GSK-3β/β-catenin and periostin-mediated Wnt signaling pathways; however, further research is needed to confirm its mechanistic role.

Funding: This work was supported by the Junta de Andalucía (grant PI-0268-2019) and the Instituto de Salud Carlos III (grant PI18-00803), co-funded by the European Regional Development Fund (FEDER) and CIBERFES (CB16/10/00475). C.G.F. and B.G.F. were funded by grants C1-S0033 and CP22/00022 from the Junta de Andalucía and the Instituto de Salud Carlos III, respectively.