COMMENT ON KOROMANI ET AL.

Vertebral Fractures in Individuals With Type 2 Diabetes: More Than Skeletal Complications Alone. Diabetes Care 2020;43:137–144

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In a recent publication, Koromani et al. (1) focused on vertebral fractures (VFs) in patients affected by type 2 diabetes (T2D) (1). They conducted a systematic PubMed search to identify studies that examined the association between T2D and VFs (1). The authors also assessed cohorts providing individual participant data (IPD) (1). They evaluated 15 studies including 852,705 men and women (1). They conclude that individuals suffering from T2D should be systematically examined for presence of VFs, and, as in individuals without T2D, the finding of VFs represents an indication to undergo treatment for osteoporosis to prevent future fractures (1).

MicroRNAs (miRNAs) have been demonstrated to be significant regulatory factors in the onset of diabetes and its chronic complications (2). miR146a has been implicated in the pathogenesis of diabetes and its chronic complications (2). Circulating miR146a has been verified to be significantly lower in patients with diabetes than in age-matched healthy subjects (2,3). Hyperglycemia, longer disease duration, and HOMA of insulin resistance (HOMA-IR) have been reported to result in a reduced level of miR-146a (2). Concordantly, reduced levels of miR-146a have been independently and negatively connected with duration of diabetes, HOMA-IR, and HbA_{1c} (2). Interestingly, miR-146a expression levels have been recognized to be significantly overexpressed in patients with T2D on treatment with metformin (3). miR146a has been detected to play a major role in regulating bone remodeling and functions (4,5). It has been shown that miR146a exerts an inhibitory action on bone destruction (4). Evidence has been provided that overexpression of miR146a suppresses osteoclastogenesis (4). Osteoclasts represent the major bone resorptive cells (4). miR-146a has been observed to significantly enhance the osteogenic differentiation ability with implications therein for bone reparation (5). Overexpression of miR146a appears to counteract traumatic femoral head necrosis by regulating the osteogenic differentiation and proliferation of bone marrow stromal cells (5). Conversely, the osteogenic differentiation ability has been revealed to be inhibited by miR-146a knockdown (5).

Taken together, I suppose that abnormal levels of miR146a may be responsible for increased risk of incident VFs in T2D patients. I suppose that characterization of cutoff levels for miR146a in T2D patients with and without VFs compared with age-matched healthy individuals may be useful to define miR-146a risk thresholds to use in clinical practice for selecting patients at higher fracture risk to undergo a preventive treatment for osteoporosis.

Duality of Interest. No potential conflicts of interest relevant to this article were reported.

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