Introduction

Depression is a risk factor for osteoporosis and mechanisms behind the influence of depression on bone health are not fully comprehended. Molecular changes play a role in the pathways of stress-related disorders such as depression. miRNAs are non-coding parts of RNA that influence gene expression and used as biomarkers for several diseases. Aim: determine the five most altered miRNAs in people affected by depression and their association with bone health.

Methods

A subsample of depressed patients were selected out of a previous study (n=220) and additionally n=14 healthy controls were recruited in Potsdam, Germany. 10mL blood per person was drawn into EDTA blood tubes.

Figure 1. Sample selection and the procedure for miRNA analysis

miRNA expression was analysed through extracellular vesicle isolation and qPCR analysis, and analysed with qPCR analysis software. Associations of the five most altered miRNAs with bone health were examined through the miRNA TissueAtlas2.0 from the Saarland University, Germany.

Results

Data of n=20 participants: 11 depressed (M=47±11y; 64% female) and 9 healthy controls (M=32±11y; 56% female) were analysed (Figure 1).

380 miRNAs were analysed: 3 were significantly up- and 16 downregulated in the depressed sample compared to the controls (2-fold regulation change; adjusted p-value<0.05; Figure 2).

The five miRNAs with the highest alteration and significance in expression in depressed patients were miR-106a, miR-24, miR-20b, miR-223 and miR-23a, respectively.

Discussion

Various miRNAs show an altered expression in depressed patients and simultaneously play a role in bone metabolism.

These miRNAs could potentially be used as biomarkers for the influence of depression on bone.

Future analyses should investigate the association of altered miRNAs due to stress-related disorders with bone health in more detail and within a bigger sample to confirm or deny the current findings.

Literature