Introduction Rheumatoid arthritis (RA) and osteoarthritis (OA) are inflammatory diseases leading to joint destruction and disability. Apart from joint inflammation they are characterised by high-grade (RA) or low-grade (OA) systemic inflammation. Thus, it is possible that proinflammatory environment affects not only articular (AAT), but also subcutaneous adipose tissue (ScAT) activity.

Objectives The aim of present work was to compare reactivity of AAT and ScAT from RA and OA patients to proinflammatory stimulus.

Methods AAT and ScAT explants, obtained from OA (n=44) and RA (n=43) patients during knee joint replacement surgery, were cultured (100 mg/ml) for 24 hours in medium (DMEM) alone or in the presence of proinflammatory IL-1β (1 ng/ml), known to be overproduced in inflamed joint. Concentrations of cytokines (proinflammatory IL-6 and TNF, anti-inflammatory IL-1Ra, IL-10, TGFβ), chemokines (CCL2, CCL5) and metalloproteinase MMP-3 were measured in culture supernatants by ELISA. OA patients were treated with non-steroidal anti-inflammatory drugs while RA patients were given disease modifying drugs and/or glucocorticosteroids. Data were analysed as stimulation to control ratio (IS, index of stimulation) measured by ELISA. Liver fat was scored to evaluate metabolic changes. Liver fat was scored to evaluate metabolic changes. Arthritis progression was scored and quantified based on histologic stainings of the joints (H/E, safranin O, Masson-Goldner). Immunohistochemical stainings of the joints were performed to evaluate local distribution of adipokine positive cells. Metabolic parameters were correlated to the progression of OA.

Results In OA the levels of secreted factors were significantly higher in AAT, but ScAT was characterised by significantly higher increase of IL-6 (IS=16.4), TGFβ (IS=2.0), CCL2 (IS=1.8), and MMP-3 (IS=9.9) production than AAT (IS=70.3; 1.3; 1.3; 2.4 respectively). The up-regulation of other cytokines was similar in both tissues. By contrast, in AAT and ScAT from RA patients IL-1β-triggered increase of all tested factors secretion was similar. Moreover, upon IL-1β treatment the up-regulation of IL-6 (IS=13188) and MMP-3 (IS=9.1) in AAT of RA patients as well as of CCL2 from rheumatoid AAT (IS=3.2) and ScAT (IS=3.7) was significantly higher than in OA tissues (IS=70.3; 2.4; 1.3; 1.8 respectively).

References We report that in OA ScAT, exposed in vivo to low-grade inflammation, retains higher reactivity to proinflammatory stimulus than AAT located in chronic high-grade inflammation. In RA, however, reactivity of both adipose tissue is rather similar but in the case of secretion of some factors (CCL2 and/or IL-6, MMP-3) higher than in OA, reflecting more destructive character of this disease.

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Disclosure of interest None declared