Patchy distribution of joint inflammation resolved

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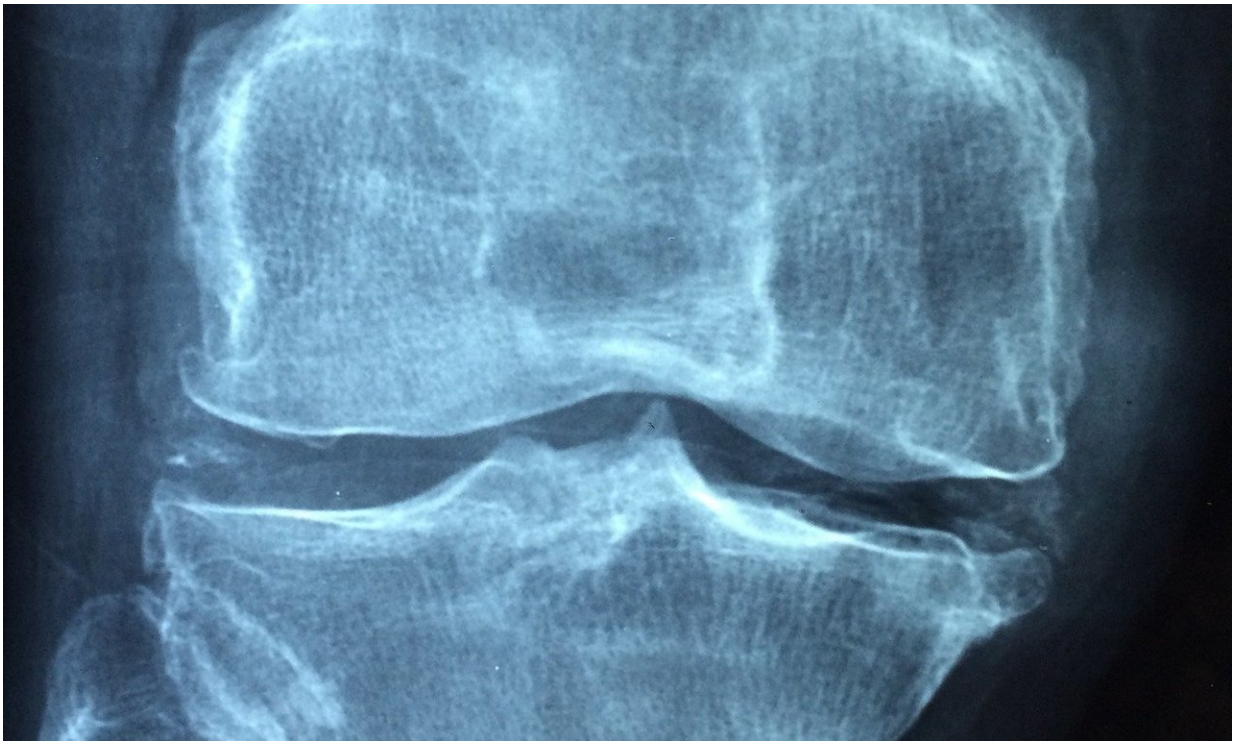

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Chronic inflammatory rheumatic diseases such as rheumatoid arthritis (RA) and spondylo-arthritis (SpA) are chronic, disabling diseases with a poor outcome for loco-motoric function if left untreated. RA and SpA each affect about 1 percent of the population. The reason that certain joints are more affected than others has been a longstanding question,

now resolved by Isabelle Cambré and Prof. Dirk Elewaut from the VIB-UGent Center for Inflammation Research. The results appear in *Nature Communications*

They found that biomechanical forces are key drivers of joint involvement. By studying the inflammation-induced bone erosions in detail, they identified certain hot spots in the musculoskeletal system where joint inflammation and erosions are more likely to occur. These sites are especially sensitive to mechanical loading and explain the clinical pattern of joint involvement described in human patients.

The team also discovered the underlying mechanisms, involving the release of certain inflammatory mediators like chemokines by joint resident cells in response to mechanical stress. This in turn leads to recruitment of certain white blood subsets, classical monocytes, into mechanically stressed regions where they mediate inflammation and subsequently tissue damage such as erosions.

Isabelle Cambré (VIB-UGent), says, "Our results explain to a large degree the patchy nature of joint inflammation in human arthritis and the clinical pattern of joint involvement." We are currently trying to unravel the underlying pathways driving this inflammation. We are excited about this as this is potentially a new area of research at the intersection of mechanobiology and inflammation.

Questions from patients

A breakthrough in research is not the same as a breakthrough in medicine. The realizations of VIB researchers can form the basis of new therapies, but the development path still takes years. This can raise a lot of questions. Patients can refer questions to the email address that VIB makes available for this purpose: patienteninfo@vib.be. Everyone can submit questions concerning this and other medically-oriented research

directly to VIB via this address.

More information: Isabelle Cambré et al. Mechanical strain determines the site-specific localization of inflammation and tissue damage in arthritis, *Nature Communications* (2018). DOI: 10.1038/s41467-018-06933-4

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