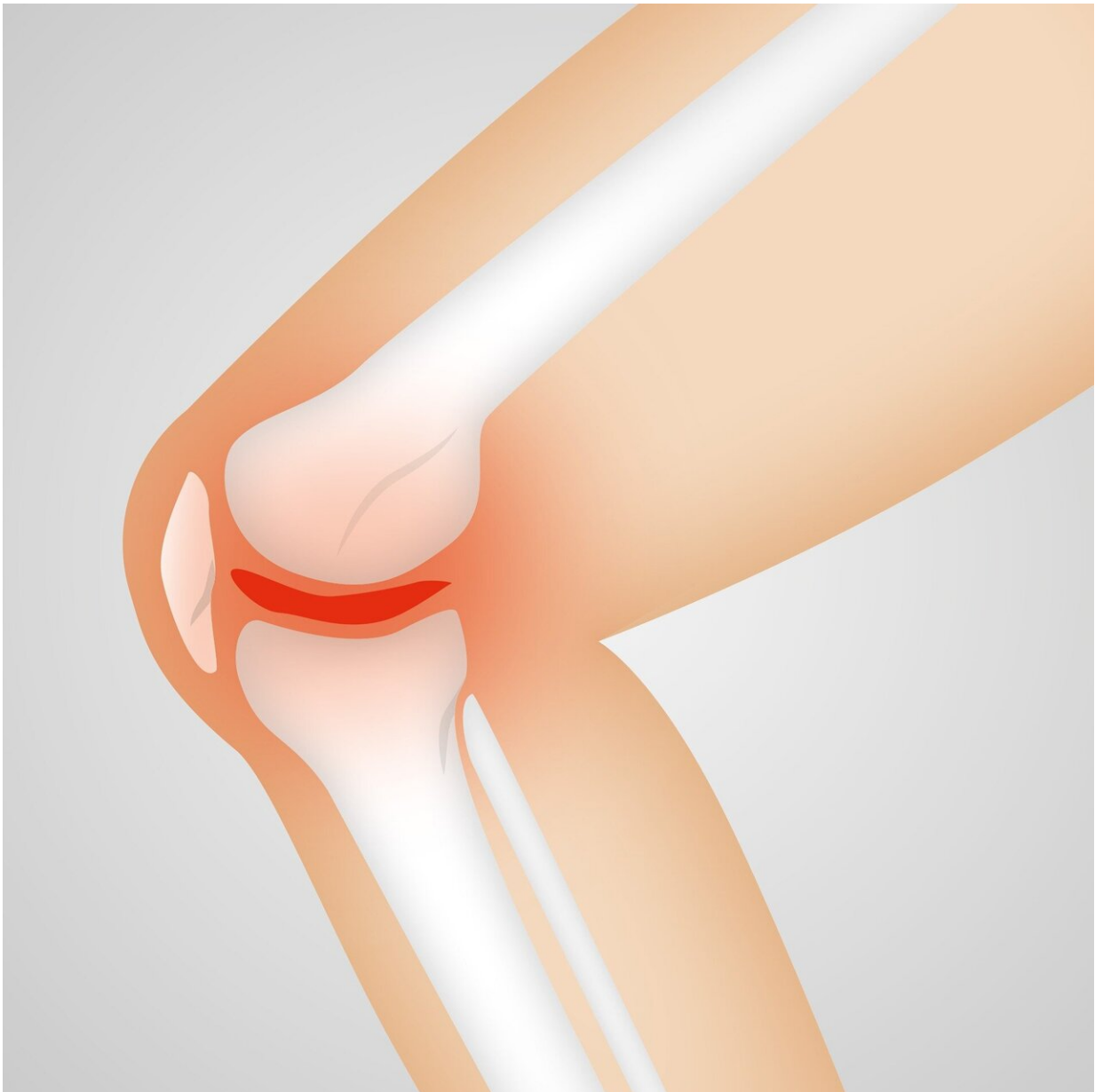


# Mast cell levels may explain sex differences in osteoarthritis pain

November 14 2022

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Investigators at Hospital for Special Surgery (HSS) have discovered that at the time of total knee replacement, women have significantly increased levels of immune cells called mast cells in synovial tissue surrounding the knee joint than men. Their findings, presented today at the annual meeting of the American College of Rheumatology, ACR Convergence 2022, may help future research explore why women with knee osteoarthritis report worse pain than men.

Researchers at HSS and other institutions have noted that women with knee osteoarthritis report more pain than men, but the reason for this difference has been unclear. "Others have speculated that women tend to delay surgery more than men, but when we looked in our database, that wasn't true," said HSS rheumatologist Dana Orange, MD, MS, assistant professor at The Rockefeller University and senior author of the study.

"We studied synovial tissue removed at the time of total knee arthroplasty to look for a biological reason that may explain the difference in reported pain between sexes."

Synovial tissue lines the knee joint and produces fluid that helps the joint move. It can become inflamed as osteoarthritis progresses. Pathologists at HSS have been generating data on different types of cells found in synovial tissue, including [mast cells](#), which are also found in many other tissues throughout the body and are commonly known for producing inflammatory chemicals called histamines during allergic reactions and asthma. Basic research by other scientists has suggested a link between mast cells and osteoarthritis progression and pain.

Dr. Orange and colleagues, including HSS rheumatologist Bella Mehta,

MBBS, MS, lead author of the study, studied joint tissue obtained from 96 women and 61 men who underwent total knee replacement at HSS. They counted the number of cells for more than a dozen cell types typically found in synovial tissue and examined synovial fluid and blood using a high-powered microscope. They also evaluated patient-reported pain outcomes collected with two validated surveys.

"At HSS, we were in a unique position to conduct this research because we have synovial tissues collected from patients with end-stage osteoarthritis undergoing arthroplasty and expert musculoskeletal pathologists who systematically grade [tissue samples](#) for 13 characteristics," Dr. Mehta said.

The investigators discovered that synovial tissue from women had significantly more mast cells, 63 per sample area, compared to 46 in tissue from men, on average. They also found higher levels of a byproduct of mast cells called tryptase in synovial tissue from women than men, providing further evidence of increased mast cell activity. No other differences in synovial tissue between sexes were observed. Finally, as expected, women reported worse pain than men on both surveys.

"We hope our findings encourage other researchers to start thinking about biological factors that may contribute to sex differences in patient-reported pain in knee osteoarthritis," Dr. Orange said.

**More information:** Conference:  
[www.rheumatology.org/Annual-Meeting](http://www.rheumatology.org/Annual-Meeting)

Provided by Hospital for Special Surgery

Citation: Mast cell levels may explain sex differences in osteoarthritis pain (2022, November 14) retrieved 14 January 2023 from <https://medicalxpress.com/news/2022-11-mast-cell-sex-differences-osteoarthritis.html>

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