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Challenges of identifying and treating patellofemoral osteoarthritis

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Twenty-five per cent of persons aged 30 years and over experience knee pain on most days.[1] For many, the pain is mild and avoidable but for a substantial number, it limits activity and diminishes the quality of life. The patellofemoral joint is often the source of this pain, especially among women. Among those 45 years and over, knee pain is most likely to be due to osteoarthritis (OA) and the patellofemoral joint is often affected.[2] If osteoarthritic patellofemoral pain could be identified and treated successfully, it might offer opportunities to substantially reduce the burden of knee pain in the community among middle-aged and older persons.

HOW DO WE IDENTIFY PATELLOFEMORAL OA?

Patellofemoral osteoarthritic pain occurs in a knee with underlying OA, and usually patellofemoral and tibiofemoral compartments are affected. It is often extremely challenging to identify whether the pain is emanating from the patellofemoral joint or elsewhere in the knee. Much osteoarthritic pain originates in an inflamed synovium and most of the synovium is located superior to the patella. Therefore, when damage to tibiofemoral cartilage or other articular structures releases debris into the synovial fluid, that debris is ingested by the synovium, leading to synovitis; this could lead to the spurious perception that pain is emanating from the patellofemoral joint.

In clinical practice diagnostic tests are used which are thought to identify knees with patellofemoral pain. These include the patient's report of anterior knee pain, pain while climbing stairs and absence of pain while walking on level ground. Examination features providing clues that the patient has patellofemoral pain include crepitus and pain with patellofemoral compression. However, these diagnostic tests are often not reproducible and do not have high sensitivity and specificity. [3] While crepitus may associate with patellar and not tibiofemoral MRI changes,[4] there is no evidence that they have high sensitivity or specificity in diagnosing painful isolated patellofemoral OA. Even in combination (eg, pain with stair climbing and patellar tenderness), these tests do not discriminate well between persons whose knees show isolated patellofemoral OA and those either with more widespread structural disease or with isolated tibiofemoral disease.[3] For example, many

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persons with isolated MRI findings in the tibiofemoral compartment often have diagnostic findings suggesting patellofemoral OA.

In a recent trial,[5] we successfully treated persons with patellofemoral OA with a patellar brace and showed structural improvements on MRI in the patellofemoral but not the tibiofemoral joint. The success of this targeted trial suggests that identifying and treating patellofemoral OA is achievable. To identify persons with patellofemoral OA, we used a multipronged strategy including the presence of pain with activities that stress the patellofemoral joint such as stair climbing or kneeling, and tenderness on examination in the patellofemoral joint. Identifying persons with clear-cut patellofemoral OA will probably require patients to have several disease features. While such an approach is likely to classify correctly persons with isolated patellofemoral OA, it will miss many persons whose pain emanates from the patellofemoral joint but who have only one positive test.

DOES IT MATTER IF WE IDENTIFY PATELLOFEMORAL OA?

Medical treatments for knee pain currently target the overall knee, and the patellofemoral joint is not a focus. Surgical approaches, on the other hand, need to identify with accuracy whether the patellofemoral joint is a source of pain. This affects knee replacement strategies and the appeal of patellofemoral joint surgery. For rehabilitative treatments, identifying persons with patellofemoral pain is important. Strategies to enhance external rotation of the femur or which work on strengthening muscles which alter the kinematics of the patella are indicated primarily if the patellofemoral joint is the source of pain.

CHALLENGES IN TESTING TREATMENT STRATEGIES

Knee OA is a chronic disorder for which many exciting rehabilitative strategies have been identified. While most studies of rehabilitative strategies suggest that these strategies provide short-term pain relief, this does not usually lead to improved treatment of patients.

There are two major problems with current testing strategies for new treatments. First, new strategies are tested in trials against no rehabilitative treatments, a scenario that almost always shows treatment benefit but provides no comparison against standard treatment. If standard treatment is also included, the trial is likely to be too small to show a difference. Second, trials are short-term and OA is a chronic disease. Long-term adherence to rehabilitation interventions is limited as evidenced by a recent trial of a rehabilitative programme.[6] More trials testing new treatments are needed and some coordination of trial designs across centres may encourage multicentre studies or at least coordinated design, which might permit comparisons of treatment efficacy. Extending interventions to 1 year or longer with built-in strategies to encourage adherence would enhance the likelihood that treatments, if implemented, would make patients better.

In conclusion, the patellofemoral joint is a critical source of pain in many persons with knee OA. Identifying those persons and testing effective treatment strategies for them that include long-term benefits are all major challenges in the treatment of patellofemoral OA.

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