Opinion

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Chronic and Acute Knee Pain Associated with Trauma

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Introduction

As the knee has the largest articulating surface of any joint and is weight bearing, it is not surprising that it is among the most commonly injured body parts. Acute knee pain accounts for over one million emergency department visits and more than 1.9 million primary care outpatient visits annually in the United States alone [1,2]. The evaluation of knee pain most likely caused by musculoskeletal injury from acute trauma, chronic overuse, or a combination of these, particularly as this may occur in athletic and active adults, is reviewed here. The topic includes details about obtaining an effective history and a general scheme for differentiating among the causes of musculoskeletal knee pain based upon the history and key clinical findings. Discussions of how to approach undifferentiated knee pain in the adult and of specific causes of knee pain are found separately [3]. (See Approach to the adult with unspecified knee pain and Patellofemoral pain and Meniscal injury of the knee and Clinical manifestations and diagnosis of osteoarthritis and Knee bursitis and anterior cruciate ligament injury and Overview of running injuries of the lower extremity) Knee pain is a common complaint that affects people of all ages [4]. Knee pain may be the result of an injury, such as a ruptured ligament or torn cartilage. Medical conditions — including arthritis, gout and infections-also can cause knee pain. Many types of minor knee pain respond well to self-care measures. Physical therapy and knee braces also can help relieve pain. In some cases, however, your knee may require surgical repair.

Acute Knee Pain Associated with Trauma

Approach and differential diagnosis-In the setting of pain immediately following acute trauma, whether the trauma involved a direct blow or not (i.e. non-contact injury), assessing for an effusion is a critical step [5]. How to detect an effusion is described separately. (See Physical examination of the knee section on Detection of an effusion) When looking for an effusion, it is important to note that complete tears of the collateral ligaments are often associated with tears of the knee joint capsule. When this occurs, effusion may be minimal or absent since capsule tears allow the intra-articular fluid to drain through the tear into the calf musculature. An important possible finding in effusion associated with capsular rupture is a tight, ecchymotic, or significantly swollen calf, which is often misdiagnosed as suspected deep vein thrombosis (DVT) [6].

Symptoms

The location and severity of knee pain may vary, depending on the cause of the problem. Signs and symptoms that sometimes accompany knee pain include:

1. Swelling and stiffness
2. Redness and warmth to the touch
3. Weakness or instability
4. Popping or crunching noises
5. Inability to fully straighten the knee

Types of arthritis

More than 100 different types of arthritis exist. The varieties most likely to affect the knee include:

Osteoarthritis: Sometimes called degenerative arthritis, osteoarthritis is the most common type of arthritis. It's a wear-and-tear condition that occurs when the cartilage in your knee deteriorates with use and age [7].

Rheumatoid arthritis: The most debilitating form of arthritis, rheumatoid arthritis is an autoimmune condition that can affect almost any joint in your body, including your knees [8]. Although rheumatoid arthritis is a chronic disease, it tends to vary in severity and may even come and go.

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Gout: This type of arthritis occurs when uric acid crystals build up in the joint. While gout most commonly affects the big toe, it can also occur in the knee [9].

Pseudo gout: Often mistaken for gout, pseudogout is caused by calcium-containing crystals that develop in the joint fluid. Knees are the most common joint affected by pseudogout.

Septic arthritis: Sometimes your knee joint can become infected, leading to swelling, pain and redness. Septic arthritis often occurs with a fever, and there's usually no trauma before the onset of pain. Septic arthritis can quickly cause extensive damage to the knee cartilage. If you have knee pain with any of the symptoms of septic arthritis, see your doctor right away [10].

Bones

Your knee joint is formed where three bones meet. These are:

Thigh bone, Shin bone, Knee cap.

Thighbone: This is also known as the femur

Shinbone: This is also known as the tibia.

Kneecap: This is also known as the patella.

Results

The most common knee pain pattern was tibiofemoral only pain (62%), followed by patellofemoral only pain (23%) and combined pain (15%). The combined pain pattern was associated with greater odds of reporting pain, symptoms, sports or recreational activity limitations and lower knee-related quality of life compared to either isolated knee pain patterns, after adjusting for demographics and radiographic disease severity. Individual item analysis further revealed that patients with combined pain had greater odds of reporting difficulty with daily weight bearing activities that required knee bending compared to tibiofemoral or patellofemoral only pain patterns. Furthermore, symptoms, functional status, and knee-related quality of life were comparable between patients with patellofemoral and tibiofemoral only pain patterns, after adjusting for demographics and radiographic disease severity. Outlines the patient-level characteristics and knee pain risk factors for the patients according to the pain pattern category of their painful knee (if reporting unilateral pain) or the most painful knee (if reporting bilateral pain). No statistically significant differences between the three pain groups were evident in terms of gender, age, or BMI. Nearly half of the participants in each pain category did not meet the radiographic disease severity criteria for tibiofemoral OA of grade 2 or higher. Furthermore, the distribution of radiographic disease severity was not different between the tibiofemoral only and the combined knee pain groups. However, the patellofemoral only pain group demonstrated a greater percentage of knees with low disease severity scores of 0-2 and lower percentage of knees with high disease severity scores of 3-4 compared to the tibiofemoral only and the combined knee pain groups. Significant race and recruitment center effects were also observed between the three pain groups which were subsequently adjusted for in all statistical analyses.

Discussion

Combined patellofemoral and tibiofemoral pain is associated with poorer clinical presentation compared to isolated knee pain from either location. Additionally, patellofemoral pain in isolation may be as important as tibiofemoral pain in causing symptoms and functional limitation in older adults with chronic knee pain. Our results also indicate that a high percentage of patients with patellofemoral only pain had significant levels of self-reported knee pain (57.5%), other symptoms (49.3%), limitations with sports/recreational activities (74.3%) and diminished knee-related QOL (91.6%; Table 2). Interestingly, these percentages were comparable to those reported by patients with tibiofemoral only pain. This finding suggests that pain arising from the patellofemoral region may be as important as tibiofemoral pain in influencing a patient with chronic knee pain to seek medical care. Yet, studies to better understand and more effectively manage patellofemoral joint symptoms and the related functional limitations in older adults with chronic knee pain continue to receive little attention in the literature.21,22 Thus, further efforts to develop and validate effective approaches that specifically address patellofemoral pain in older adults with chronic knee pain, such as those successfully used in management of patellofemoral pain in younger patients40-42 may be worthy of continued research.

Conclusions

Pain and functional disability are the principle reasons why patients with chronic knee pain seek medical treatment. The findings of the current study suggest that presence of combined tibiofemoral and patellofemoral pain may have an additive effect, leading to greater pain, symptoms and worse knee-related QOL. Therefore, consideration should be given to examining and tailoring treatments to both knee regions in patients with combined knee pain pattern. Additionally, given that patients' perception of their functional limitations may have important impact on diagnosis-seeking and treatment decision-making behaviors, targeted treatment of limitations with weight bearing functional task that require knee bending could be an effective strategy in addressing the potential declines in quality of life and disability in older adults with combined knee pain. Additionally, patellofemoral pain may be as likely a cause of symptoms and functional limitation as tibiofemoral pain in older adults with chronic knee pain. Further research to develop and validate effective approaches that specifically address patellofemoral pain in older adults with chronic knee pain may be warranted.

Acknowledgement

None

Conflict of Interest

None

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