Anterior Knee Pain: A Paradigm of Aversion Towards a Pathology

Dolor anterior de rodilla: un ejemplo de aversión hacia una patología

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"That those who know her, know her less, the nearer her they get"
Emily Elizabeth Dickinson

Anterior knee pain (AKP) is very common in the general population, causing chronic disability, lost time from work, limitations in participating in sports, and a diminished quality of life. AKP represents one third or more of all complaints in a sports medicine clinic. In a study on participants from the U.S. Naval Academy, Boling *et al*.[1] found an AKP prevalence of 15% in females and 12% in males. They also observed that the annual incidence of AKP was 33 of 1000 people in female patients and 15 of 1000 people in male patients. Nevertheless, in spite of its high incidence and prevalence, the etiology of AKP is obscure, which complicates treatment and hinders recovery. In a multicentre observational analysis study, Collins *et al*.[2] showed that 40% of patients had an unfavourable recovery at 12 months after the initial diagnosis. Moreover, AKP is recurrent or chronic in 70% to 90% of individuals with the condition[3]. The etiology of AKP is multifactorial, with not only local (e.g., knee) factors but also proximal (e.g., hip and trunk) and distal (e.g., foot and ankle) ones. In fact, in many patients the primary cause of AKP does not lie within the patellofemoral joint, and there are several subgroups within the AKP population. Therefore, the best treatment must be tailored to individual patients. Among all the subsets of patients with AKP, the most challenging type of AKP, from a therapeutic point of view, is neuropathic. Once conventional treatments have failed in these patients, alternatives such as radiofrequency neurotomy and the repetitive transcranial magnetic stimulation can be considered[4]. We are currently exploring these techniques in our work group in this subset of patients.

"Chondromalacia patellae" (soft cartilage on the knee cap) was previously used as a catch-all term for any pain in the anterior aspect of the knee, but the term has been replaced by "patellofemoral pain syndrome" in reference to patients with AKP. However, neither term expresses a diagnosis but rather presents an admission of ignorance. Not all the patients with AKP have chondromalacia patellae, and many patients with chondromalacia patellae do not have from AKP. For example, van der Heijden *et al*.[5] have not found any differences in the patellofemoral cartilage composition between AKP patients and healthy controls. Further, even patients with severe patellofemoral chondropathy may not have knee pain. Consequently, the International Patellofemoral Study Group advises against using these terms as a diagnosis and suggests that "anterior knee pain" might be better because it is descriptive, without implying anything more.

Yet, AKP is a pathology in which numerous clichés and false beliefs coexist. One of the clichés is that a patient with AKP has a peculiar psychological profile that might explain the pain. This belief is reinforced by many patients having very disabling pain but insignificant radiological findings and unremarkable physical signs. The psychological explanation could not be further from the truth though. Domenech *et al*.[6,7] have demonstrated that psychological factors modulate the pain, but they do not cause it. Rathleff *et al*.[8] have shown that young female adults with long-standing AKP demonstrated impaired conditioned pain modulation. This is, AKP might have important central components that need to be studied in order to understand its extent and therapeutic implications. Another misconception is that AKP is a self-limiting and benign condition, which is why some physicians recommend "expectation" measures. That approach is a great mistake. Collins *et al*.[2] have demonstrated that the success of the therapy depends on how recently the pain began. Rathleft *et al*.[9] reported that AKP is not a self-limiting knee condition. Further, AKP in an adolescent has a high potential for becoming chronic. Conchie *et al*.[10] brought into question the traditional belief that AKP in adolescence is a benign pathology, by showing that

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it is associated with patellofemoral osteoarthritis in adulthood. That is, AKP and patellofemoral osteoarthritis may form a continuum of disease. Therefore, we must take this pathology seriously.

In addition, to make the black legend of this pathology even bigger, we must point out that it is a source of iatrogenia[11]. We must be very cautious when recommending surgical treatment in AKP patients. This caution is particularly directed to those "well-meaning trigger-happy orthopaedic surgeons" educated in a purely structural/anatomical/biomechanical view of this pathology. These surgeons operate on what magnetic resonance imaging (MRI) shows. This approach is a blunder—the patient who began with just mild, intermittent symptoms becomes even worse. The same condemnation applies to inappropriately aggressive physical therapy. We must beware of structural anomalies. In fact, only a poor correlation exists between structural anomalies (chondropathy, patellar tilt and patellar subluxation) and AKP. We must avoid inappropriate or incorrect malalignment-oriented patellofemoral surgery. In agreement with Dye[12], I believe that the loss of both osseous and soft tissue homeostasis is much more important in the genesis of AKP than structural alterations (Paradigm of Tissue/Joint Homeostasis).

Unluckily, the criteria for proper treatment of the AKP patient have largely been based on individual experience. The malalignment theory strongly supported by many orthopaedics surgeons, with an almost religious fervor, has enormously damaged many AKP patients and has given this pathology a bad reputation. We need to refine the indications for AKP management and surgery, and for this refinement to happen, more studies with a high level of evidence are needed. We should not be distracted by structural findings manifested on an MRI. In this way van der Heijden *et al*.[13] have shown that structural abnormalities of the patellofemoral joint have on MRI are not associated with AKP.

We should instead treat symptoms and the patient as a whole. All pieces of the puzzle must fit. If the MRI says "small tear of the medial meniscus", but the patient's pain is in the patellofemoral joint, then the structural finding on the MRI is likely not the cause of the pain, and it not should be used to justify an arthroscopy.

In most cases an AKP patient should be treated non-surgically. Physical therapy must include the entire lower limb, with particular attention to the hip musculature[4]. Very often a patient's knee has suffered a loading event that has diminished the functional envelope of function[12] in such a way that daily activities are beyond it. I must admit that in some cases it is hard to restrict activity below the new envelope of function. It is like asking a mechanic to complete an overhaul on the transmission of a car while driving it around town. But the worst part of unrestricted activity is that it obscures the underlying problem, that is the decrease of the functional envelope of function, and can lead to inappropriate surgery; that is, surgery that makes things worse.

The preceding text reveals why many orthopedic surgeons have an aversion towards treating the AKP patient. These patients are quickly sent (by other colleagues) to the orthopedic surgeon who excels at treating this kind of pathology, although he or she is distant from the patient who experiences it. Surgeons appear to be put off by these patients even before studying their cases. However, in my eyes, AKP is one of the most intriguing pathologies from a clinical point of view because it obliges us to "think out of the box", to look deeper into the anatomy, biomechanics, biology, anatomic pathology, physiopathology and psychology.

Many years ago a good friend of mine from the United States told me that to stand out in something I had to focus on a topic that was not well-known and that many did not like. Twenty years ago, AKP fulfilled both and continues to do so. It is currently not a well-known clinical entity and, moreover, orthopaedic surgeons do not usually like to treat it. Paraphrasing the great American poet Robert Frost[14] in his poem "The Road Not Taken", I took the least travel road 20 years ago; that is, I focused on the patella. As in his poem, it made all the difference. Without a doubt, I do not regret having chosen this road.

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