

Patellofemoral osteoarthritis: how do patients behave?

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ORIGINAL ARTICLE

Abstract

Background: Patellofemoral osteoarthritis is detected in a large number of patients and is responsible for multiple symptoms and signs, among which pain predominates, its treatment is varied and ranges from conservative to surgical, in which the arthroscopic route stands out.

Objective: Show the behavior of a group of patients with patellofemoral osteoarthritis.

Material and methods: A descriptive observational study was carried out in 96 patients with the clinical and radiographic diagnosis of patellofemoral osteoarthritis from January 2015 to April 2017. The non-probabilistic and intentional sample consisted of 77 patients who met the selection criteria (inclusion and exclusion).

Results: The average age was 52.2 years, the female sex, the right kneecap predominated and the cause that was most observed was primary. Pain during rest is one of its main manifestations. There is a correlation between the Iwano T and Outerbridge RE classification. In general, there are other affected compartments of the joint, the isolated presence is very rare, and arthroscopic treatment is very useful.

Conclusions: Patellofemoral osteoarthritis is frequent, it generates symptoms and signs in a large group of patients. The presence of this condition is usually associated with other joint injuries, and patients can be treated arthroscopically.

Keywords: Pain; previous; knee; osteoarthritis; patellofemoral

Osteoartrite patelofemoral: como se comportam os pacientes?

Fundo: A osteoartrite femoropatelar é detectada em grande número de pacientes e é responsável por múltiplos sintomas e sinais, entre os quais predomina a dor, seu tratamento é variado e vai do conservador ao cirúrgico, em que se destaca a via artroscópica.

Objetivo: Mostre o comportamento de um grupo de pacientes com osteoartrite patelofemoral.

Material e métodos: Estudo observacional descritivo realizado em 96 pacientes com diagnóstico clínico e radiográfico de osteoartrite patelofemoral no período de janeiro de 2015 a abril de 2017. A amostra não probabilística e intencional foi composta por 77 pacientes que atenderam aos critérios de seleção (inclusão e exclusão).

Resultados: A média de idade foi de 52,2 anos, predominou o sexo feminino, a rótula direita e a causa mais observada foi a primária. A dor durante o repouso é uma de suas principais manifestações. Existe uma correlação entre a classificação Iwano T e Outerbridge RE. Em geral, há outros compartimentos da articulação afetados, a presença isolada é muito rara e o tratamento artroscópico é muito útil.

Conclusões: A osteoartrite femoropatelar é frequente e gera sintomas e sinais em um grande grupo de pacientes. A presença dessa condição geralmente está associada a outras lesões articulares e os pacientes podem ser tratados por via artroscópica.

Palavras-chave: Dor; anterior; joelho; osteoartrite; patellofemoral

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INTRODUCTION

Pain in the anterior aspect of the knee (ARD) responds to a large number of entities, hence it is important to define the origin of the symptoms and signs as much as possible. The history of trauma suggests the presence of a post-traumatic injury. The bilateral condition indicates a pure patellofemoral lesion, when there is joint blockage it may be due to a meniscus injury. Joint inflammation suggests intra-articular conditions such as synovial plica, synovitis, joint loose bodies, chondral or osteochondral lesions and meniscus, as well as patellofemoral osteoarthritis (PA).^{1, 2, 3}

Due to the large number of entities responsible for RAP in our setting, systematic physical and imaging examination is important, which is accompanied by arthroscopy that defines the type of injury and its magnitude.^{4, 5, 6}

PAD can present in an isolated or combined form, but it usually occurs in the latter, it is associated with lesions of different compartments, involvement of the meniscus, synovial plicae, among others.^{7, 8}

Imaging investigations such as plain radiography, ultrasound, computerized axial tomography, and magnetic resonance imaging are helpful in defining the possible cause or causes of this condition.^{9, 10, 11} Symptoms and signs are usually long-standing and nonspecific, making early diagnosis difficult. The pain is related to overuse and increases in frequency and intensity as time passes and the condition worsens, it is dull with periods of exacerbation and difficult to define at a specific point by the patient. For the treatment of patellofemoral pain (DPF), various conservative and surgical treatment modalities are used, within the latter modality there are arthroscopic, non-arthroscopic and combined techniques.^{12, 13}

Due to PA in the population, the objective of this research is to show the behavior of a group of patients with this entity.

MATERIAL AND METHODS

A descriptive observational study was carried out in 96 patients with the clinical and radiographic diagnosis of patellofemoral osteoarthritis from January 2015 to April 2017. The non-probabilistic and intentional sample consisted of 77 patients who met the following selection criteria (inclusion and exclusion) .



Inclusion criteria: patients 40 years of age or older, with poor and limited response to standardized conservative treatment in a six-week period; Arthroscopically operated in which the diagnosis of PA was confirmed.

Exclusion criteria: patients with signs of local and general infection prior to surgery, patients previously operated arthroscopically.

For the diagnosis of osteoarthritis, the criteria of Hochberg MC et al. ¹⁴ proposed by the American Academy of Rheumatology. The x-ray in axial view was used to identify the degree of the classification of Iwano T et al. ¹⁵ which is divided into four stages:

- Stage 1. Light osteoarthritis, joint narrowing greater than three millimeters.
- Stage 2. Moderate osteoarthritis, joint narrowing of less than three millimeters.
- Stage 3. Severe osteoarthritis, bone contact less than a quarter of the joint surface.
- Stage 4. Very severe osteoarthritis, bone contact throughout the joint surface.

The primary source of information was obtained from outpatient clinical records.

The following measures were used to describe the information: absolute and relative frequency distributions for qualitative variables. The female / male sex ratio, right / left patella was calculated. Arithmetic mean for quantitative variables such as age. For the association between independent qualitative variables (Iwano stage T ¹⁵ and Outerbridge RE ¹⁶ classification) the chi-square test (χ^2) was used. Tabular presentation or alternatively graphic representation to improve the visualization and analysis of the information. The SPSS statistical package was used in its version 21.0.

All participating patients filled out the informed consent form and the research was approved by the Medical Ethics Committee and Scientific Council of the institution.

RESULTS

The average age of the 77 patients was 52.2 years, with a minimum age of 40 years and a maximum of 80. The female-male sex ratio was 3.2 to 1 and that of the right-left patella was 1.1 to 1. The Primary cause predominated in 69.2% of the patients, while chondrocalcinosis and post-traumatic disease were detected in 10.3% each. Patellofemoral instability represented 9% of the cases (Table 1).

Table 1: General behavior.

Promedio de edades	52.2 años (Rango: 40-80)
Razón sexo femenino:masculino	3.2:1 (59/18)
Razón rótula derecha:izquierda	1.1:1 (41/36)
Etiología	
Primaria	54 (69.2%)
Condrocalcinosis	8 (10.3%)
Postrumática	8 (10.3%)
Inestabilidad patelofemoral	7 (9%)

Source: Outpatient clinical records.

Pain during rest was observed the most in 42.8%, followed by going down and climbing stairs in 38.9%. Joint blockage was present in 32.4% and pain in the sitting posture in 22%. Patellofemoral crepitation was manifested in 19.4% (Figure 1).

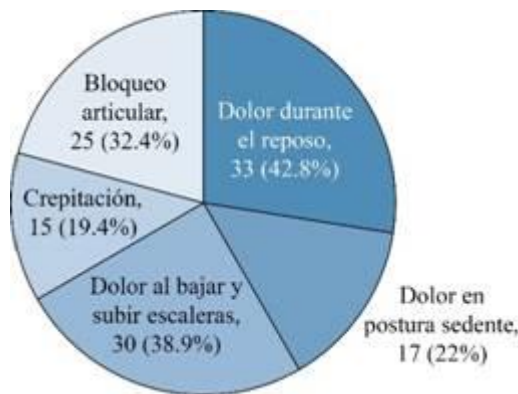


Figure 1: Behavior of symptoms and signs.

Significance was found between the Iwano T¹⁵ stages and the Outerbridge RE¹⁶ classification (p = 0.000), the highest frequency was shown in Iwano T¹⁵ stage 2 and Outerbridge RE¹⁶ grade III with 21 patients in 27.2%. Iwano T¹⁵ stage 3 contributed the highest number of patients with 38.9%, Outerbridge RE¹⁶ grade III represented 55.8% of the cases studied (Table 2).

Table 2: Relationship between the Iwano T and Outerbridge RE classifications.

Iwano T	Outerbridge RE						Total	
	Grade II		Grade III		Grade IV		Freq.	%
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Stage 1	9	11.6	1	1.2	-	-	10	12.9
Stage 2	2	2.5	twenty-one	27.2	-	-	23	29.8
Stage 3	1	1.2	twenty	25.9	9	11.6	30	38.9
Stage 4	-	-	1	1.2	13	16.8	14	18.1
Total	12	15.5	43	55.8	22	28.5	77	100

p = 0.000

Source: Outpatient clinical records.

Tricompartamental affection was the one most observed in the investigation in 31 patients, followed by participation of the medial tibiofemoral compartment in 27, the lateral compartment was associated in 12 patients and the isolated presentation was detected in only 7 patients (Figure 2). More than one type of arthroscopic treatment was used per patient (Table 3).

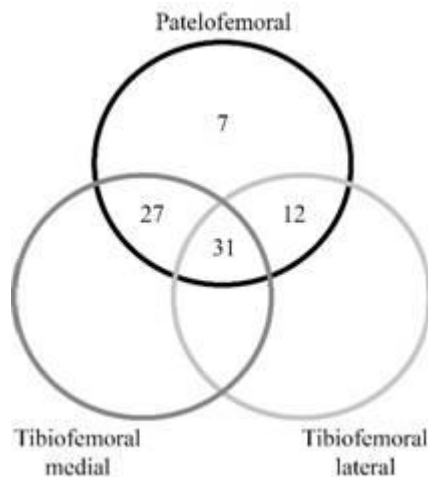


Figure 2: Associated affected compartments.

Table 3: Type of arthroscopic treatment used.

Tratamiento artroscópico	Frecuencia	Porcentaje
Lavado articular	16	20.7
Desbridamiento con cuchillas motorizadas	47	61.0
Desbridamiento con cuchillas manuales	21	27.2
Microfracturas	5	6.4
Desbridamiento con electrocoagulador o radiofrecuencia	39	50.6

Source: Outpatient clinical records.

DISCUSSION

The results obtained in the research are very similar to those reported by Barragán-Hervella R, et al. ¹⁷ Regarding the average age of 48-53 years and the predominance of the female sex of 70.3%, a coincidence was found between the maximum ages of the two investigations. On the other hand, this same author reported a predominance of the right knee in 19 patients, so the results of the study coincide with these authors. The predominance of the female sex in knee osteoarthritis also coincides with that stated by Arteaga-Solís JR, et al. ¹⁸

In relation to symptoms and signs, pain is responsible for seeking medical assistance. Although articular cartilage is an aneural structure, the degenerative process produces a series

of chemicals that irritate structures with nerve endings within the joint, in addition to the distension effect caused by synovitis. Osteoarthritis pain is mechanical and its presence during rest and at night suggests an advanced stage of the disease. On the other hand, the mechanical stresses of the patellofemoral joint are extreme when going down and up stairs, hence the pain is more pronounced in these positions. ^{19, 20, 21}

Joint blockage in patients with gonarthrosis responds to meniscus affections, detachment of cartilage fragments, and loose joint bodies, but these causes are sometimes combined in the same patient. Patellofemoral crepitus in isolation is not a problem of interest; however, when it is associated with pain and swelling of the knee, then it does have a useful clinical translation. Its causes are multiple, among which the irregularity of the articular surfaces stands out, which when making contact cause crepitus. ^{22, 23, 24}

The Iwano T ¹⁵ classification was designed for patients with PA and is divided into stages, which range from a minimal injury to another of great severity, although this aspect is imaging and has a clinical and arthroscopic interpretation. In the latter case, it is related to the Outerbridge RE classification, ¹⁶ which evaluates the deterioration of the articular surface, especially cartilage, in degrees. The identification of this association between these two classifications is important in the opinion of the authors, since a patient with an advanced stage of Iwano T ¹⁵ is highly likely to present an advanced grade of the Outerbridge RE classification ¹⁶ Treatment strategies for patellofemoral osteoarthritis can be established before surgery, in which other factors are also taken into account, such as: age, physical activity and the patient's own conditions. ²⁵

The joint degenerative process has a long evolution, hence the involvement of the patellofemoral compartment by itself is very low, except for those caused by previous trauma or previous dislocation of the patella. The tricompartmental condition is the most reported in the literature by different studies. ^{26, 27} On the other hand, the bicompartamental involvement of the patellofemoral and medial tibiofemoral compartments is the second in frequency and the combination of patellofemoral and medial tibiofemoral compartments is the most reported. ^{26, 27, 28}

The short-term results of arthroscopic debridement are good, the arthroscopic route allows this procedure to be performed accompanied by others, for example microfracture. However, sometimes other surgical techniques must be used, taking into account the alignment of the patellofemoral complex and the degree of cartilage injury. ^{29, 30} Patellofemoral osteoarthritis is a common entity that generates symptoms and signs in a large group of patients. The presence of this condition is usually associated with other joint injuries and patients can be treated arthroscopically.

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