

Atraumatic knee pain in young, active patients – is there any pain "without cause"?

Stefan Chindris¹, Ariana Patac²

¹ Department of Orthopaedics, UMF Iuliu Hatieganu Cluj-Napoca, Romania

² Sports Medicine Department, Rehabilitation Hospital Cluj-Napoca, Romania

Abstract. The occurrence of knee pain in a patient who is physically active is often an unpleasant incident. The emergence of painful symptoms may be related to joint strain, to minor traumatic incident or may be installed insidiously, without being connected to a specific event. Very commonly, the patient will present himself promptly at the doctor's office for a consultation, given the age and the physical activity that he used to perform before the onset of pain. This paper aims to study the causes and incidence of knee pain in young people who have physical activity. We also tried to straighten if, in our study group, pain had a functional or anatomical character.

Key words: *knee pain, non-traumatic, athletes.*

Introduction

Knee pain is an unpleasant event in the existence of any person. Recent studies show that is one of the most common manifestations of orthopedic disorders in the elderly (1). However it appears at younger ages (2), especially athletes or overweight persons (3). Knee disease incidence is increasing lately (3, 4, 5). The occurrence of knee pain significantly lowers the quality of life, the more so as the patient is young and active (6). Apart the obvious traumatic cases, in which the cause of the pain is represented by a major injury, identified by a clinical or imaging examination, in our current practice we have met many cases in which, at first sight, have not been identified any pathological modifications of the knee, but the subsequent evolution has been difficult.

Material and Method

In the present study we have tried to clear whether there are anatomical lesions, on the basis of these symptoms, constitutional deficiencies or osteoarthritis modifications. In the current study tried to determine the causes of the acute knee pain, without a traumatic cause.

We have conducted a prospective longitudinal study on a group of 200 patients who have presented themselves in Orthopedics and Traumatology Ambulatory or Sports Medicine Ambulatory, between 1st of January 2009 and 30th of September 2011.

The batch tracking methodology consisted in an initial clinical and radiological examination and clinical control initially, at 7 days and respectively 14 days. In cases in which the symptoms have not improved, laboratory and imaging investigations have been performed, according to medical history and clinical manifestations. For the present study, we have considered the following parameters:

1. knee pain, having a diffuse character and being difficult to be localized, which did not yield spontaneously or after administration of non-steroidal anti-inflammatory (NSAIDs) within 5 days after its occurrence;
2. age between 20 and 45 years old;
3. physical activity, at least twice a week, without being taken into consideration the type of physical activity, here being included all types of recreational sports, physical activity represented by occasional hobbies or just walking, except some of them, listed below;
4. the lack of a traumatic incident that the patient can remember;
5. the existence of a discomfort that prevents resumption or continuation of sport activity.

As exclusion criteria from the present study, we have considered:

1. the existence of a notable trauma in patient's history, which would have required at a certain time, specific therapeutic measures;

2. Coexistence of concurrent or consecutive traumatic disorders of joints or of surrounding areas.
3. The existence, by the consultation time, of knee traumatic laxity.
4. Violent contact sports, such as fighting of any kind, in which repeated trauma can lead to microlesions, which are difficult to be assessed clinically.

Batch structure:

The total number of patients experiencing knee pain, in relation to the total number of patients who came to medical office was 11.62%.

By gender - 112 male patients and 78 female patients (fig 1).

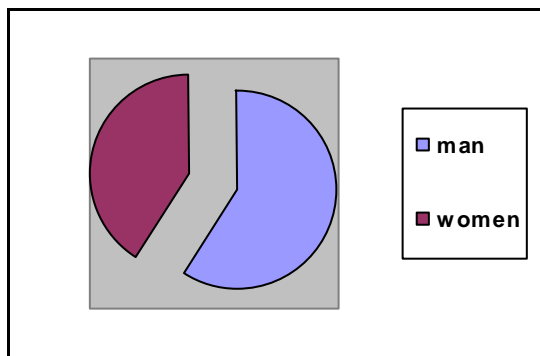


Figure 1. Gender distribution

By age - patients between 20 and 30 years old 70, patients between 30 and 40 years old,88 and 42 patients over 40 years old.(fig. 2)

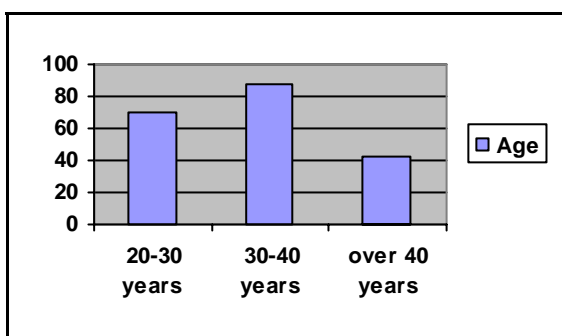


Figure 2. Age distribution

The pain level perceived by the patient was evaluated on the Knee Injury and Osteoarthritis Outcome Score (KOOS) self-assessment score basis, with a mean value of 48.5.

By body mass index, under 25-47 patients, between 25 and 30 102 patients, over 30 51 patients (fig.3).

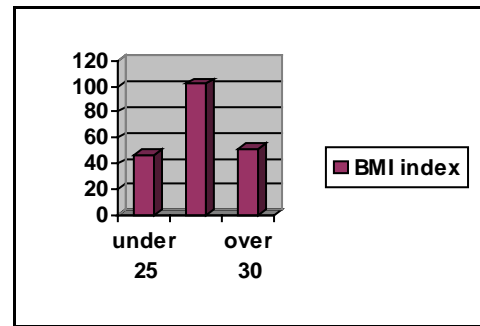


Figure 3. BMI distribution

By the intensity of sport activity, light meaning 2-3 days of physical activity per week 104 patients, 4-5 days of physical activity per week 58 patients, daily physical activity 38 patients (fig. 4)

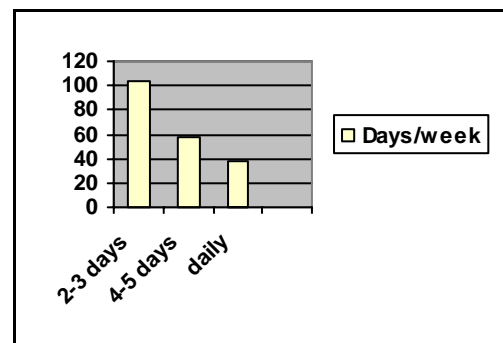


Figure 4 Distribution over the number of sports activity days/week

By sport activity before the age of 20 years 72 professional sportsmen patients younger than 20 years old, 128 patients without professional sport activity younger than 20 years old (fig. 5).

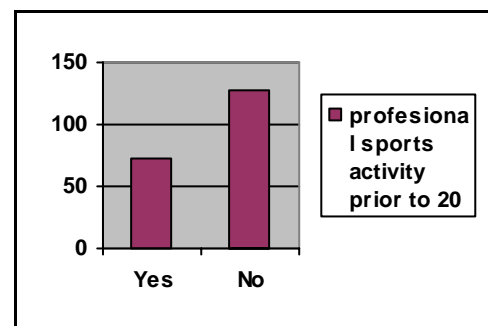


Figure 5. Distribution over the professional sports activity prior to 20 years

By the period elapsed between the onset of symptoms until the date of presentation at the doctor's office for the first consultation,106 patients with less than 5 days,59 patients with 5 to 10 days,and 35 patients with more than 10 days (fig. 6).

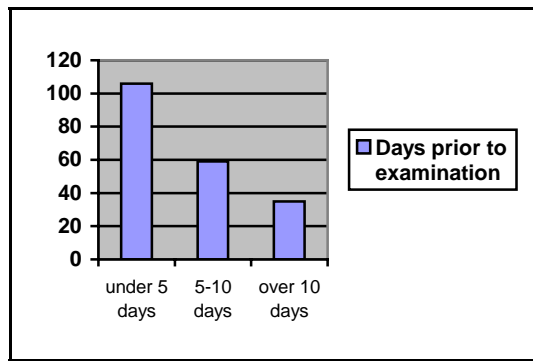


Figure 6 Distribution over the time elapsed until the first medical examination

patients without professional sport activity younger than 20 years old.

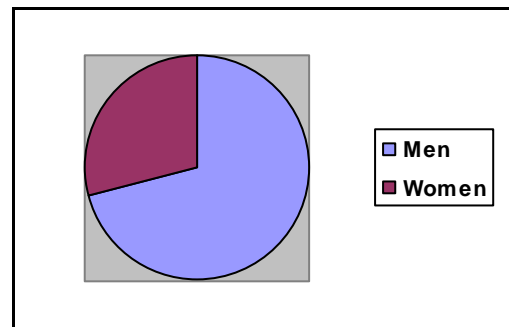


Figure 7. Gender distribution

The prescribed therapeutic protocol has been the same: to rest the lower limb without walking ban and without immobilization, concurrent with nonsteroidal anti-inflammatory (NSAIDs) administration in a brief cure of 7 days. Specific anti-inflammatories have been used, in adjusted doses in function of patient's body weight. The clinical reassessment of the patient has been made 7 days and respectively 14 days after the initial consultation.

The intermediate results of the study showed that, despite the rest and the anti - inflammatory treatment administrated, a number of 72 (36%) patients still experienced knee pain syndrome. Thus, we have structured a second group of patients for whom the treatment has been found ineffective.

Hereafter is presented the batch structure thus formed:

- by gender: 51 male and 21 female (fig. 7);
- by age: patients between 20 and 30 years old 9 (12,5%), patients between 30 and 40 years old 32 (44.4%) and 31(43%) patients over 40 years old (fig. 8);
- by pain level perceived by the patient and evaluated on the Knee Injury and Osteoarthritis Outcome Score (KOOS) self-assessment score basis, with a mean value of 68.5;
- by body mass index (BMI): under 25-14 patients, 30 patients between 25- 30, over 30 - 28 patients (fig.9);
- by the intensity of sport activity: light meaning 2-3 days of physical activity per week - 11 patients, 4-5 days of physical activity per week - 28 patients, daily physical activity - 33 patients (fig. 10);
- by sport activity before the age of 20 years: - 25 professional sportsmen patients younger than 20 years old, - 47

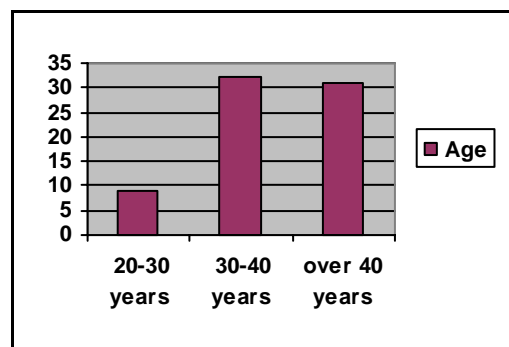


Figure 8. Age distribution

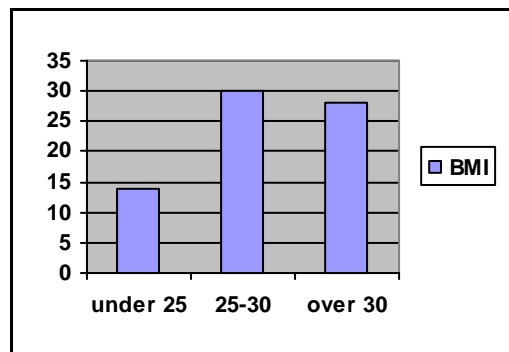


Figure 9. BMI distribution

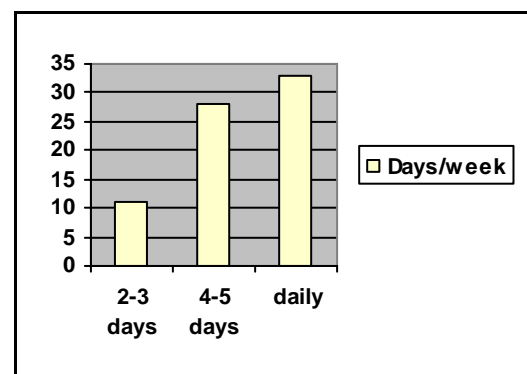


Figure 10. Distribution over the number of sports activity days/week

Our protocol for patients' investigation has included the following methods:

1. History resumption in order to detect possible acute respiratory infections or to detect a contact with such patients, urinary infections or unresolved dental infections.
2. Biological sampling swab in order to perform routine, laboratory tests, ESR (Erythrocyte Sedimentation Rate), fibrinogen, C-reactive protein, Antistreptolysin O (ASO) titer, throat secretions and urinalysis.

If the outcomes of these tests have been within normal limits, I have proceeded to further imaging exploration of patients, as follows:

1. If pain was felt periarticular, ultrasound examination has been requested.
2. In case of deep pain, MRI examination has been requested.

Results

After this second set of investigations we have obtained the following results (table I):

Pathology	Case numbers	%
upper respiratory acute infection	6	8.3
increased ASO titer.	9	12.5
increased ESR without any detectable inflammatory manifestations.	3	4.1
increased C-reactive protein	2	2.7
unknown anterior cruciate ligament rupture	5	6.9
traumatic injuries of menisci	6	8.3
degenerative modifications or malformation of the menisci (meniscal cysts or discoid meniscus)	2	2.7
femoral laceration of quadriceps tendon or pes anserinus	4	5.4
distal femoral or proximal tibial tumors	4	5.4
mediopatellar or suprapatellar plica	3	4.1
no detectable pathological modification.	31	43

Table I. Results of investigations

Patients with specific lesions have been treated according to the diagnosis in question. Patients who had no pathological lesions, have been introduced in a therapeutic protocol, consisting in the administration of NSAIDs and physiotherapy. They have also been advised to reduce their physical activity level or change it with one less demanding. Following these measures, for a number of 17 patients, representing 54 % have been registered the remission of symptoms.

Discussions

The knee pain in case of the active patients is the most common reason for which the young patients present themselves at specialty ambulatory. Interpretation of symptoms is being difficult, for the batch we have selected, because of the patient's involvement in sports or recreational activities as well as the differences of pain threshold which exist between patients.

Considering that the pain was the only symptom present, the commencement of anti-inflammatory treatment and putting at rest the segment, seems to be the most reasonable attitude. As a proof, 64% of total number of patients responded favorably to the treatment prescribed.

However, in case of 36% of patients the pain persisted. A later protocol of investigations uncovered, in a significant percentage, a number of patients with well-defined specific lesions of joint or periarticular structures as well as manifestations due to a knee inflammatory syndrome. Remains uncertain the fact whether these symptoms could have improved in the absence of physical exercise performed by patients or not.

After the exclusion of cases listed above, still remained a number of 31 patients, representing 15.5 % from the total number, in whom have not been detected any inflammatory or structural modifications.

According to our study, the most of cases with persistent knee pain occurred at overweight males, over 30 years old, with over 4 days of sports activity per week.

They represent the patients who are the unhappy with the medical performance, especially if the pain returns after resuming physical activity.

In their case remains a question, whether the diagnostic protocol should be continued and how or whether it would be wiser to advise the patients

to change their type and intensity of physical effort.

A second unanswered question is: is there any pain without a cause which could be interpreted as a synovial reaction to overstress or only exist underdiagnosed patient?

The large number of patients with residual knee pain, despite all medical investigation, should make us think about a following protocol, in order to detect any modifications in the local or general aspect of the patient.

Conclusions

The knee pain, in case of a physical active patient, represents the first reason for which a sports or an orthopedic doctor is requested.

The absence of an injury, prior to the onset of symptoms is confusing, for the patient, and the physician, as well. Initiation of a non-steroidal anti-inflammatory treatment generally makes the pain to diminish or disappear, but can lead the physician on a wrong path.

In the absence of widely accepted diagnostic protocol, the patient who present these symptoms is very difficult to diagnose, in our study 7.5 % of patients being at least at the second consultation performed by a specialist doctor.

The existence of physical activity of patients and a longer duration from the onset of symptoms delays and makes difficult patient's diagnosis.

Initiation of a therapeutic protocol, *ab initio*, may cover some severe diseases, with possible future severe implications. As a proof, stands the relatively high number of patients to whom have been detected well-defined lesions, after exhaustive investigations.

Remains still open the question about the relation between medical cost and efficiency of the "excessive investigation" of patients. In regard with the question from the title "is there any pain without cause?" meaning no evident cause, at first sight, it would seem that it does exist. Most likely, this was due to a mechanical strain of synovial joint, due to physical effort, in the terms of overweight and lack of fitness. Regarding the possibility to extend this diagnostic protocol, by indicating a close follow-up for the patients in whom symptoms persist, still remains in question. Revaluation of level and type of physical effort, seem to be the simplest solution and perhaps the most effective one, although it is the most difficult accepted by the patient.

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Corresponding author

Ariana Patac
Address com Feleacu 538, jud Cluj Romania.
E-mail: arianapatac@yahoo.com

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