



Isokinetic evaluation of quadriceps peak torque after its contusion

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Abstract

The aim of this paper was to evaluate quadriceps peak torque after 6 months from the muscle contusion. The clinical material consists of 4 male cases, age range from 19 to 47 who sustained a quadriceps contusion of dominant leg. An isokinetic evaluation of quadriceps peak torque showed significant decrease in comparison to opposite healthy leg by average 19,5% in spite of full range of motion recovery. Heterotopic bone formation was disclosed on x-rays in two cases. This study indicate the need of additional objective isokinetic evaluation of quadriceps muscle after its contusion.

A quadriceps contusion may be a significant cause of athletic and occupational disability [1]. The treatment regimen includes rest and ice with gentle motion before returned sport activities [2,3]. Some authors preferred short immobilization in 120 degrees of flexion [4]. Occurrence of myositis ossificans as a complication of quadriceps contusion can be present in 20% of patients [5]. On the basis of this data it is assumed that a patient sustaining quadriceps contusion should have decreased peak torque of the muscle in spite of good functional status. An objective evaluation of quadriceps peak torque after its contusion was not a subject of publication (no data in pubmed basis). The aim of this paper was an isokinetic evaluation of quadriceps peak torque after muscle contusion.

MATERIAL AND METHODS

The material consists of 4 male patients who sustained quadriceps contusion. The data concerning all patients are summarized in table 1. Isokinetic evaluation of quadriceps peak torque was done with the system 3 Biodex isokinetic dynamometer (180 degrees/s) [5,6]. The x-ray evaluation was done in all cases.

RESULTS

All patients undergo standard rehabilitation including rest, passive stretch of quadriceps and physiotherapy. The x-ray examination disclosed myositis ossificans in 2 cases. The average deficit of peak torque of quadriceps was 19,5% (table 1).

Table 1. Basic data of patients

Patients	Age (years)	Follow up (months)	Q peak torque difference (%)	Leg	Range of motion	Myositis ossificans
1	19	7	21	dominant	full	+
2	23	9	19	dominant	full	+
3	21	12	15	dominant	full	-
4	47	47	23	dominant	full	-

DISCUSSION

The present study has shown the quadriceps contusion can cause an average 19,5% decrease of its peak torque. This is a significant value since the dominant leg was injured. The present study proved the opinion that recovery of normal function is possible even in the presence of myositis ossificans [4] however this may be in contrast to objective isokinetic evaluation of quadriceps peak torque. According to established criteria a return to sport should be combined with the decrease of quadriceps peak torque < 10% of opposite healthy leg [7] thus the isokinetic evaluation should be done in every case of quadriceps contusion.

CONCLUSIONS

1. Quadriceps contusion can decrease the muscle peak torque.
2. The functional evaluation of injured leg after quadriceps contusion should be combined with isokinetic one.

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