SUMMARY

Femoroacerabular impingement (FAI) syndrome is a hip joint impairment, which occurs frequently as a result of repeated overloading of the joint in combination with the imperfect orientation of the articulating surfaces. Therefore, it does not respect the biomechanically optimal position of the joint. Currently, many experts consider FAI as an important factor contributing to hip degeneration with the subsequent coxarthrosis. In our research, we evaluated how the FAI translates into normal walking. We used 3D kinematic motion analysis as an objectivization method.

Objective: The study aimed to objectify changes in basic walk parameters, lower limb joint and pelvic movements in normal walking in people with FAI using 3D kinematic analysis and to compare the results with a group of healthy people.

Sample: 21 patients (7 females, 14 males) were selected for the study with the confirmed FAI by clinical examination and X-ray. The control group consisted of 18 healthy probands (8 females, 10 males) in whom the hip joint morphology by MRI was excluded.

Methods: All probands underwent walking examination using 3D kinematic motion analysis using the Qaulisys system. Data were processed by the Qualisys Track Manager and the Visual3D software. The subject of the examination was the basic walk parameters, ankle and knee movements in the sagittal plane, hip joint movements in the frontal and sagittal planes, and pelvic movements in the sagittal, frontal and transversal planes during walking.

Results: While comparing the FAI group and the control group, there were significant changes particularly in the shortening of the step cycle, in the hip extension and the knee extension. The changes were also reflected in pelvic movements, but rather non-significant there.

Conclusion: The walking stereotype in patients with FAI shows changes in comparison to healthy individuals. Our results correspond to the work of foreign authors dealing with functional changes in patients with FAI in certain parameters. We extended this knowledge by changes in the basic parameters of walking (step length, cadence) and a change in the movements of other joints of the lower limb (knee, ankle).

Key words: femoroacetabular impingement, FAI, kinematic motion analysis

Bibliographic record:

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