THE LEADING RISK FACTORS FOR DEVELOPING INTENSIVE PAIN SYNDROME IN THE KNEE JOINTS IN PATIENTS WITH OSTHEOARTRITIS

L.I. Alekseeva, E.A. Taskina, N.G. Kashevarova, S.G. Anikin, E.P. Sharapova, E.A. Strebkova, T.A. Korotkova, A.U. Feklistov

V.A. Nasonova Research Institute of Rheumatology, Moscow, Russia, Moscow, Russian Federation

Background

Intensive pain is one of key predictors of OA progression, although it remains unclear which key factors are responsible for the development of intensive pain.

Objective

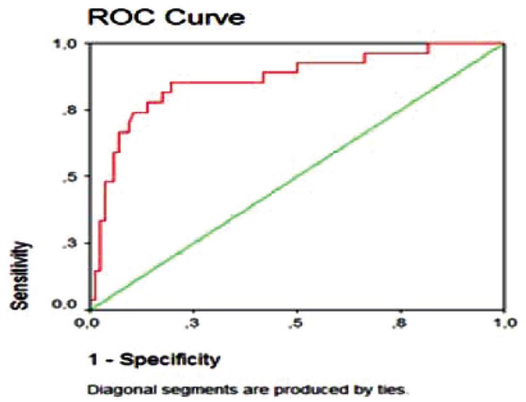
To study the risk factors for developing intensive knee pain in OA pts in a multicenter prospective study.

Materials and Methods

A prospective 5-year study included 185 female-patients from 6 RF territorial entities aged 40-75 y. with confirmed knee OA (ACR criteria), stages I–III (Kellgren J.-Lawrence J), who signed an informed consent. Mean age was 59±8,1 y., the age at knee pain onset was 49±8,7 y., and average OA duration was 11±8,4 y. Individual annual medical file included patient's anthropometric parameters, case history, clinical examination findings, evaluation of knee pain intensity by VAS, WOMAC scale, the knee joint status, comorbidities and therapeutic modalities used during the follow up period. Instrumental diagnostic methods included plain radiography of knee joints, dual energy X-ray absorptiometry (DEXA) of the lumbar spine, femoral neck and of subchondral bone of the hip and tibia, ultrasonography (US) and MRI examination of knee joints. Stage II of knee OA was documented in 135 (73%) out of 185 pts, and stage III – in 50 (27%). Statistica10.0 and SPSS 15.0 packages were used for statistical analysis.

Results

Based on pain intensity pts were divided into two groups: Group I - pts with more intensive pain (>70 mm VAS) – 16,8%, and Group II – pts with less intensive knee pain (<70 mm VAS) – 83,2%. Both groups were comparable in terms of age 58,8±7,68 vs 61,06±5,91 y., and disease duration 10 (5–17) vs 12 (6–18) y. Although, pts from Group I had statistically significantly higher body weight 82,7±13,8 vs 74,8±12 kg (p=0,002), higher pain estimations by WOMAC 374 (348–382) vs 225 (172–268) mm (p<0,0001), stiffness 100 (80–125) vs 80 (60–110) mm (p=0,01), FI 1102 (970–1238) vs 820 (646–935) mm (p<0,0001) and total WOMAC 1541 (1462–1702) vs 1130 (880–1291) mm (p<0,0001). Besides, pts from Group I had greater percentages of varus knee deformity – 80,6% vs 29,2% (RR=2,76, 95% CI 2,04-3,73, p<0,0001) and of H. valgus 87,1% vs 59,1% (RR=1,47, 95% CI 1,22–1,78, p=0,002). MRI showed higher rate of bone marrow edema in medial tibia in Group I: 51,9% vs 31,1% (RR=1,67, 95% CI 1,07–2,59, p=0,03) compared to pts from Group II with less pronounced pain. A multivariate (discriminant) analysis showed that the most important risk factors for developing intensive knee pain in OA pts were: significant functional impairment, presence of knee varus deformity and Heberden's nodes, cartilage abnormalities (MRI finding) in medial tibial compartment, familial OA. A model capable of predicting development of intensive knee pain in an individual patient with high accuracy (area under the ROC-curve 0,910 (95% CI 0,860–0,961) has been developed based on identified RF and their coefficients.

Factors	Discriminant function coefficients	ROC-curve
FI	0,0047	
Varus deformity	1,7423	
Cartilage destruction in the medial tibial compartment	0,4584	
OA in parents	0,9684	
Heberden's nodes	0,8273	
Constant	8,533	

Model accuracy is 87%.

Conclusion

In a prospective multicenter study, using comprehensive instrumental modalities (knee radiography, ultrasonography, MRI, and BMD of peripheral bones and subchondral hip and tibia) it has been demonstrated that intensive knee pain (>70 mm VAS) is caused by excessive functional impairment, presence of knee varus deformity, Heberden's nodes, OA in parents, and cartilage destruction in the medial tibial compartment.