

Back pain in adolescents with spinal deformities

Sabrina Donzelli, Fabio Zaina, Francesca Di Felice, Stefano Negrini

ISICO Italian Scientific Spine Institute, ISICO, University of Brescia

Background: Back pain prevalence ranges from 7 to 58% of subjects aged between 13 and 15, equally distributed in males and females. Back pain prevalence in scoliosis adolescents was found to be around 47%, but no studies investigated the prevalence of back pain in different spinal deformities, despite pain is considered a typical symptom of spinal pathologies. AIM To document the prevalence of back pain, in all its forms in a large population of adolescents with spine deformities and to investigate the association of back pain and different spine pathologies.

Methods: This is a retrospective cross-sectional study from a clinical prospective database. All the patients visited between 2010 and 2015 were asked for pain at first clinical evaluation by a single expert physician. If they referred any kind of pain belonged to the PAINGroup, if not they were assigned to the NOPAINGroup. Pain description was then classified into 4 subtypes (localized or generalized, limiting or occasional). Inclusion criteria: age between 10 and 18, spine deformity diagnosis, Exclusion criteria: secondary deformities and other associated pathologies. T-test was used to check for difference in the two groups considered for SRS-22 score, age and BMI. Chi-2 test was applied for checking the association between the presence of pain and diagnosis and pain subtypes; sports activities and previous treatment with brace.

Results: 702 completed the SRS-22, (males n=468), mean age 13.3+-1.92. The included patients have the following diagnosis: adolescent idiopathic scoliosis (n=387;55.1%), sagittal unbalance (which includes hyperkyphosis and junctional kyphosis without Scheuermann disease (n=134; 19.1%) Scheuermann deformities (n=67;9.55%); all other diagnosis including postural collapse, leg length discrepancy and aspecific back pain (n=114; 16.2%). The sample was divided in two groups: PAINGroup (258 subjects 36.8% of the entire sample) and NOPAINGroup. Mean age in PAINGroup 13.6+-1.9 and in NOPAINGroup 13.06+-1.9 p>0.05. Pain score at the SRS-22 was 4.10+-0.57 in PAINGroup and 4.75+-0.71 in NOPAINGroup (p= 0.0000). Among patients with AIS 32% referred pain, in the group of sagittal unbalanced patients 55% and in the group with Scheuermann disease 52%. Pain type was localized for 17.8%, generalized for 2.7%, occasional for 39.9% and limiting for 39.5%. Only Scheuermann disease predispose to pain (chi2= 10.2 Fisher exact test = 0.002), Sagittal unbalance is slightly associated to pain with chi2 = 3.65 Fisher exact test = 0.05. BMI and Age were not significantly associated with SRS SCORE, nor sports activities and previous brace treatment.

Discussion and conclusion: This is the first study investigating the epidemiology of different type of back pain in a large population of adolescents with spine deformities, by using a SRS-22. Thoracolumbar and lumbar occasional pain are more frequent in patients with Scheuermann deformities, scoliosis patients have milder pain symptoms and refer to the specialist for pain in fewer cases. Sports activities and previous brace treatment, as AGE and BMI have no relationship with pain complaints, SRS-22 score or pain localization.