INCIDENCE OF SPONDYLOLYSIS AT THE ADOLESCENTS.

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We performed a prospective roentgenograph^ study to determine the incidence of Spondylolysis on 330 unselected medical students. The lumbar spines of 330 skeletons of medical students of both sexes were examined to determine the incidence of defects in pars interarticularis. The overall incidence of lumbar spina was 11.3 per cent of this group was together spondylolysis.

***Key Words** : Spondylolysis, Incidence, Spondylolisthesis, Lumbar 'nation, Sacralization, Spina Bifida.*

Spondylolysis and spondylolisthesis has been described in the medical literature for more than a century (6). The natural history of the disease is not clear defined. Spondylolysis in the lower lumbar vertebra is an occasional isolated radiographic finding in an unexpectedly young adult complaining of chronic low back pain. The fundamental lesion in the most common ■ type of spondylolysis is a defect in the pars interarticularis. (1,2,7,8,10,11). This lesion is neither present at birth, nor there is any hint of defect at birth. (11,12). Killian (1854) pointed out that this was due to slow displacement of the last lumbar vertebra and called interarticularis (Neugebauer) defect is rarely seen under the age of years. From the age 8 to 20 the incidence progressively increases and this group represents 8.5 per cent of the total diagnosed cases (6). In adults with the classic pars defect the slip is usually under 25 per cent. After more than a century of discussion, there are still unanswered questions on the aetiology, related spinal anomalies racial incidence and prognosis of the bony defect in pars interarticularis and because of this spondylolysis is so frequently symptomless and an incidentally found (6). This report represcntsan investigation an incidence of spondylolysis, related spinal anomalies and bony defect in pars interarticularis.

MATERIALS AND METHODS :

Our main study group consisted of 330 Medical students of Dokuz Eylul University Medical Faculty.

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Supine anteroposterior, lateral and oblique roentgenograms of the lumbar spine were made for each student. Any suspected defects were rewieved with supplemental oblique roentgenograms. Tomography was used when further clarification was needed. We find the presence of spondylolysis with or without spondylolisthesis in each subjects by consensus. We search if a unilateral or bilateral defect in the pars interarticularis could be found together. Isthmic spondylolisthesis was measured by a modification of Taillard's methods (9). Sacralization or lumbarization was recorded, considering the first vertebra that was not rib-bearing tobe the first lumbar vertebrae. Absence of a spinous process or lamina, or both, on the anteroposterior roentgenogram was recorded as spina bifida was confined to the sacrum or if it extended into the lumbar region. The data obtained analysis all the students.

RESULTS :

To remind the information we report in this paper regarding spondylolysis, spondylolisthesis, sacralization, lumbarizalion, spina bifida occulta is based mostly on the cases of the 330 medical students, who pars interarticularis defect were not known before this study, in 20 per cent of the 330 medical students who were examined with roentgenograms were observed spondylolysis. Of the 330 medical students two hundred and two of the 330 students were male and one hundred twentyeight were female. At the 68 students, a pars interarticularis defect was found. Fourteen of these 68 spondylolysis students have bilateral pars interarticularis. These defects were seen in thirty six men and thirty two women of total 330 subjects. The twenty nine of these defects were unilateral and the rest were bilateral in men. Also fourteen of these defects were unilateral and eight bilateral in women. The defect oc-

cured at the fourth and fifth lumbar vertebra in conclusion, fourteen students had a bilateral defect at the lumbar vertebra and fifty - four had a unilateral defect there. The incidence of spondylolysis was found 17 per cent inmale and 25 per cent in female. Also incidence of spondylolysis with other spondylolysis findings was found 41 per cent at the riglh side and 30 per cent at the left side of the pars interarticularis. The average slip was 1.5 % per cent in all students two of them were male and the rest female. The serial roentgenograms of 55 students showed narrowing of the disc space between the fifth lumbar and the sacral vertebra. Only 11.3 per cent of the 330 subjects had some form of spina bifida occulta in adults and a defect involving the fifth lumbar vertebra could be found in only 24 per cent of this group. In addition, in one of the students there were spina bifida occulta at two levels, identified on roentgenograms. The over - all incidence of spina bifida occulta the students with a spondylolysis finding (elongation, sclerosis), was 24 per cent in adult. Sixteen of the 330 subjects had some degree of sacralization and twenty five had some lumbarization. Incidence of all architectural abnormalities was found 12 per cent. Fourteen of the lumbarization group had also pars interarticularis defects at lumbar vertebra. Amoung sacralization five of the students had the defects.

DISCUSSION :

Many authours have proposed various roengenographic measurements and sign to predict whether a patient with spondylolysis will undergo progressive spondilolisthcsis or not (5). Taillard suggested that two anatomical factors play an important role in the development of a slip (5,9); the shape of the fifth lumbar vertebra and the shape of the dome of the sacrum. Our main study showed that the incidence of spondylolysis at the fifth lumbar vertebra was 20 per cent in adulthood. We found (5) that this incidence is higher than those which previously reported (5).

Roche and Rowe 1951; Schmorl and Junghanns 1971 record the incidence a4 and 7 per cent (4). Hascbc reported incidences of just over 10 per cent in Japanese subjects (4). Stewart reported an incidence of 52.6 per cent in Eskimos (4). Shore reported an incidance of 8.9 per cent in the Black skeletons (4).

The sex distribution confirm the several previous reports of male prodomenance in a ratio varying from 2:1 to 4:1 (4,11). Equal sex distribution is reported by Stewart m, Schmorl and Junghanns (4). In our study incidence of spondylolysis was found 17 per cent inmale and 25 per cent in female Architectural abnormalities such as lumbarization, sacralization and spina bifida occulta have been associated with spondylolysis to varying degrees. Taillard reported a 42 per cent incidence of spina bifida occulta in patients with spondylolysis; Laurent and Einola, 22 per cent with spondylolysis findings together. The spina bifida occulta in our series was 11.3 percent. Einsenstein series was similar with ours as 11.8 per cent (3). The incidence of lumbarization and sacralization was found 12 per cent. Fredricakson was reported this 7 per cent (5). Laurent and Einola, as 9 per cent (5). And we found 28 per cent spondylolysis with lumbarization and 32 per cent spondylolysis with sacralization. What proportion of these spondylolysis will progress to spondylolisthesis, or having developed a slip is unknown. The other questions is what is the indications for fusion in this population?

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