SCHOOL SCREENING FOR SCOLIOSIS IN ANKARA

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School screening is a technique of importance for early diagnosis of the spinal deformities. Through this method, only observation and early bracing prevent costly and hazardous surgical interventions. 11, 116 students attending to the 6th-9th grades of secondary schools in Ankara were included in this study. 2.4 percent were referred for further evaluation. The voluntary school screening which is started in Ankara is an efficient method and worth continuing in following years.

Key Words: *School Screening, Scoliosis.*

INTRODUCTION

Scoliosis surgery had significant developments in recent years. Despite these improvements, surgical treatment owns lots of risks too. When the deformities which could have been taken under control with early diagnosis and bracing left undiagnosed, would in future lead serious deformities and pulmonary problems. School screening programs is of importance for this aspect.

School screening for scoliosis is getting more widespread in the world. The first study of such kind had been carried out by Guillare, in 1864. Scoliosis was found in 18% of 350 boys and in 41% of 381 girls. Scoliosis in the first studies was diagnosed accidently from the radiographs taken for tuberculosis screening. Despite to the wide interest for school screening throughout the world, it is only in Japan an obligation.

Many techniques were employed in school screening for scoliosis. Forward bending test of Adam is the most populer one. Aside from this, Moiré topography is used in Japan and in Canada. Thermography and rib- hump measurement are known by many.

MATERIAL AND METHOD

In this study, we evaluated the results of voluntary school screening for scoliosis in the secondary schools of Ankara during the second educational term in 1994. The work was carried out by Ankara Numune Hospital Determent of Orthopaedics and Traumatology 1 and Ankara Rehabilitation Center. 11, 116 students, who attend to seven secondary schools of central counties in Ankara were screened. The spectrum of screening included 6th-9th grades (12, 13 and 14 years of age). Screening was all accomplished by physicians. Before the study initiated, official permissions were completed. Screening staff either stayed in two separate rooms or went to the classrooms. For optimal screening boys were asked to stay with bare back and girls were asked to wear a halter top. The screening technique was forward bending test of Adam which is very simple and is rapidly performed. When a child is confirmed as having a rotational prominence or an asymmatry, the parents are informed by letter of screening result and further evaluation is requested. Standing radiographs are asked for students who came to the hospital.

RESULTS

266 of the 11,116 screened students (2.4%) were referred to the hospital. However only 54 students came to the hospital. This condition was the most important obstacle of our study. In 46 students Cobb angle was 5 degrees or more 9 students were confirmed as normal. Scoliosis rate for all screened students was 0.4%. The students who have Cobb angle from 0 to 10 degrees was 73%, 10 to 20 degrees 21%. 20-40 degrees 4% and more than 40 degrees 0%. The ratio of girls to boys averaging 1:1. Of the cases who have curvature 44 (95%) were idiopathic and 2 were (5%) congenital. Schuerman kyphosis was determined in 2 students who were put into Milwaukee brace. 44 scoliotic students were only observed and other two wore Milwaukee brace. Non of our cases required surgical intervention. The cases who were only observed or wore Milwaukee brace were invited to the hospital at 6 months intervals.

DISCUSSION

Eearly diagnosis of scoliosis is important since, it is preventable with easily bracing and it holds back

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surgical risks. School screening with these goals are employed throughout the world. The literature examples given on table 1 are about the number of screened students and prevelance. The ratios vary from 0.5% to 13.6%. The possible cause of such differences could be the number of screened students and the least accepted degree of curvature for scoliosis. For example while some reports covered even 5 degree curves, the others started from 20 degrees. Apart from this, differences in region and race could had an influence. In the study done by Segil (17), the prevelance of scoliosis was 0.03% in South African blacks and 2.5% in South African whites.

scoliosis come to the physicians who execute the study (12). In our study, all the work was done by physicians, the persentage of positive test was 2.4%. Scoliosis rate was 0.4%. This difference among these two rates can be thought as overreferral but, in fact it was failure of family to seek medical evaluation. The parents reluctance to bring their child to hospital, which is very insignificant in other countries, was the main problem of our study. The low socioeconomic may be accounted for its reason. The other problem mentioned in literature is refusal of examination. Religious believes could be its reason (11, 12). In our study, only one student refused the test.

Table 1. Scoliosis Screening Prevalance Studies (1, 14, 15, 18).

			Number Screened	Prevlence
Brooks, L.	(1975)	California (U.S.A)	3.492	%13.6
Lonstein, J.E	(1976)	Minnesota (U.S.A)	571.722	%4.0
Nissinen, M.	(1989)	Helsinki (Finland)	1.060	%4.1
Pruisjs, J.E.	(1993)	Utrecht (Netherland)	30.611	%0.5
Segil, C.	(1974)	S. Africa	929	%2.5
Simmonds, E.	(1976)	Toronto (Canada)	19.000	%3.4
Smyrnis	(1976)	Athens (Greece)	3.500	%4.6
Span	(1976)	Jerusalem (Israel)	1.000	%3.0
Shimada, Y.	(1993)	Akita (Japan)	92.370	%0.7

Lonstein (11), Brooks (4), and Drummond (8) gave the rations of 1.5:1, 1.2:1, and 1.25:1 respectively as a girls, boys ratio for idiopathic scoliosis. Our ratio was 1:1. These figures lead to the thingking that girls and boys have the same prevelance.

Some problems may arise during screenings. Over-referral was pointed out in many reports, to be the most important one. In a school screening, Dvonch found 10% of positive tests were false and called it "Schooliosis" (9). In Lonstein study, positive tests were found in 3.8% of students, but true scoliosis percentage was 1.2% (1). There may be two explanations for this situation. First, some cases without having scoliosis could show slight rib-hump and second, the technique which is used. For example screening is performed by school personnel (school nurses, health aides, or physical education teachers) in United States. Referral is made to the family physician. After physical and radiological examination, only those who have

Lonstein (12), in his study, included 10-14 age group (5-9th grades) which carry the most risks of idiopathic scoliosis for screening program. In our country, usually 12-14 age group attend to secondary schools. Should we include 10 years of age for screening? In this case, we would have to go to testing the last two grades of preliminary schools. However, we believe that it is not very necessary.

It is pleasant to see that none of 46 students who have scoliosis required surgical treatment. May be, some of the curvatures treated with nonoperative means today, would necessisate surgical intervention in the future. In fact, we are willing to see that screening programs are being scheduled in order but not a voluntary work.

Conclusion: In our study, 2.4% of screened students were referred for further evaluation. In 0.4%, scoliosis was confirmed.

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