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CONVEXITY ORIENTATION OF SINGLE SCOLIOSIS CURVES. ARE THEY AS WE HAVE ALWAYS BEEN TAUGHT? VERIFICATION OF 4470 CURVES

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Introduction

The aim of this study is to clarify in more detail a concept acquired too briefly and which can better suggest what really happens when a scoliotic curve occurs.

Considering the knowledge that has been painstakingly gathered about scoliosis, one of the data that is considered acquired is the typical convexity orientation of the curves in the frontal plane.

Classically, it is defined that about 80% of dorsal curves have right convexity, while for thoracolumbar or lumbar curves, the convexity of the curves is to the left in about 80% of cases.

Objective (s)

The purpose of this study is to verify this finding.

Study Design

Descriptive study

Methods

Data were collected from 4470 single curves of patients referred to a health institute, specializing in the conservative treatment of scoliosis.

Patients with scoliosis who had more than one curve were discarded to reduce the variables.

The curves collected had apexes only from D4 to L3. Curves with apexes higher or lower than the defined limits were discarded so as not to confuse the data with curves whose end vertebrae did not have similar inclinations.

Inclusion criteria

- Scoliosis curves with at least 10 Cobb degrees
- Male and female patients
- Age 9-18
- Without previous treatments (braces or specific exercises).

Results

The evaluation of the x-rays collected highlighted the data, which are simplified in the following table

Abstracts

	Apex	Rate of curves with right convexity	Prevalence of the apex vertebrae (right or left)
	D5	41%	0,7%
	D6	75%	1,7%
	D7	81%	4,4%
	D8	84%	7,8%
	D9	85%	8.8%
	D10	71%	8,2%
	D11	52%	8,4%
	D12	35%	23%
	L1	34,%	18,6%
	L2	34,%	14,7%
	L3	32%	3%
	L4	0,06%	0,4%

The trend is the one classically described **BUT** in the thoracic segment, the percentage of curves with right convexity exceeds 80% of cases only when the apex of the curve is between D7 and D9 and is progressively reduced as one moves away cranially or caudally.

The table shows that, for single curves, in the lumbar and thoracic segments of the spine there is no stark between right or left convexity.

The set of dorsal curves has a greater prevalence of convexity to the right, but this decreases gradually and regularly as one moves away from its peak (D8-D9).

In the lumbar region, the prevailing trend is the opposite but not clear-cut. The left convex curves are approximately 65%.

Conclusion and significance

These data suggest that there is a mechanical phenomenon that orients the convexity of the curve depending on the level of the apical vertebra. The mechanical phenomenon is still obscure, but it is a first piece of reasoning.