



Pulmonary function in patients with idiopathic scoliosis 40 years after diagnosis

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Introduction

Pulmonary function (PF) in patients with idiopathic scoliosis (IS) has been a topic of concern, with some reports of markedly decreased ventilatory function leading to disability and increased mortality in patients with severe IS. Only limited data is available concerning PF in adult patients with IS.

Methods

A total of 177 patients seen at our institution from 1972-1983 for a pediatric spinal deformity were included. 91/129 eligible patients with IS (71%) partook in a clinical examination including radiographs, and 79/91 patients (87%) had extended pulmonary function testing (EPFT) performed.

The EPFT values included forced vital capacity (FVC), forced expiratory volume in 1 sec (FEV1), FEV1/FVC ratio, vital capacity (VC), total lung capacity (TLC), residual volume (RV), RV/TLC, diffusion capacity of carbon monoxide (DLco), carbon monoxide transfer coefficient (KCO) and alveolar volume (VA). Results were expressed with z-scores derived from height normative data

Results

Of 77 included patients, 76 (99%) were females with a mean age of 54.6 ± 2.5 years. The mean follow-up time was 40.8 ± 2.8 years. Forty-four had thoracic main curves, and 33 had TL/L main curves. We found no pulmonary impairment based on z-scores in the total cohort or between groups. Patients with main thoracic curves displayed significantly lower PF on mean values and z-scores on FEV1, FVC, FEV1/FVC ratio, VC, TLC, and DLco compared with TL/L curves. We found no linear association between thoracic Cobb angle and degree of pulmonary impairment assessed with DLco, TLC, and FVC.

Conclusion

Using EPFT, no pulmonary impairment could be demonstrated compared to the age-matched population 40 years after a diagnosis of IS. However, patients with thoracic curves had decreased PF compared to TL/L curves. Thus, when treated as current guidelines suggest, patients with IS can expect the same long-term pulmonary function as the general population.

Disclosures

Benny Dahl is a consultant for Stryker and has received financial support from The Alfred Benzon Foundation

Martin Gehrchen is a consultant for Stryker and Nuvasive and has received institutional grants from Cerapedics

None of the financial support has directly supported this study. The remaining authors have no financial or non-financial disclosures.

Table 1

	Thoracic n=44	Thoracolumbar/Lumbar n=33	Total n=77	p-value
FEV1, L	2.4±0.5	2.7±0.5	2.5 ± 0.5	0.004*
FEV1, Z-score	-0.44±0.35	-0.23±0.30	-0.3 ± 0.3	0.005*
FVC, L	3.2±0.5	3.5±0.7	3.3 ± 0.6	0.021*
FVC, Z-score	-0.47±0.37	-0.29±0.40	-0.4 ± 0.4	0.040*
FEV1/FVC	0.8±0.1	0.8±0.1	0.8 ± 0.1	0.037*
FEV1/FVC, Z-score	-0.53±1.19	0.0±0.90	-0.3 ± 1.1	0.026*
TLC, L	5.1±0.7	5.5±0.8	5.2 ± 0.8	0.039*
TLC, Z-score	-0.42±0.55	-0.23±0.51	-0.3 ± 0.5	0.111
DLco, mmol/min/kPa	6.7±1.1	7.3±1.1	7.0 ± 1.1	0.031*
DLco, Z-score	-0.77±0.81	-0.37±1.00	-0.6 ± 0.9	0.063
KCO, mmol/min/kPa/L	1.5±0.2	1.5±0.2	1.5 ± 0.2	0.870
KCO, Z-score	0.00±1.21	0.03±1.20	0±1.2	0.876
VA, L	4.7±0.6	5.1±0.7	4.8±0.7	0.087
VA, Z-score	-0.80±0.91	-0.45±0.78	-0.6±0.9	0.085