

Conservative Management of Idiopathic Scoliosis

Indications for Treatment

Proposal of guideline. SOSORT document. Preliminary version (March 2005)

Prepared by SOSORT Guideline Committee: H.R. Weiss (coordinator) (Germany)

M. Rigo (Spain), T. Kotwicki (Poland), S. Negrini (Italy), M. Hawes (USA), T.B. Grivas (Greece), F. Landauer (Austria), T. Maruyama (Japan)

Correspondence should be sent to Dr Hans Rudolf Weiss: weiss.scolio.AKSK@t-online.de with the heading "guidelines". The next revision is planned June 2005.

Aims of conservative management: The primary aim of treatment is to stop curvature progression. Cosmetic improvement, increase of vital capacity as well as pain treatment is also of major importance.

Methods of conservative management of scoliosis are physical therapy (Schroth, Lyonnaise, side-shift, Isico, Dobosiewicz) and bracing. Although discussed contrarily in the international literature, there is some evidence for the effectiveness of scoliosis treatment by physical therapy alone (Negrini et al. 2003). It can be applied as **out-patient physiotherapy** (OPT). The second module of conservative management is scoliosis **in-patient rehabilitation** (SIR) which showed effectiveness with respect to symptoms, signs of scoliosis and curvature progression (Weiss, Weiss and Petermann 2003). **Brace treatment** (BT) is effective in preventing curvature progression and there is evidence that the rate of surgery can be reduced (Rigo, Reiter, Weiss 2003), vertebral rotation can be corrected (Kotwicki et al. 2002) and that sagittal profile can be improved (Rigo 1999). Brace treatment is always combined with physiotherapy.

Systematic application of the treatment modules with respect to Cobb angle and maturity:

- Chronological age is indicated for girls.
- Management modules are: observation, OPT, SIR, BT

I. Children (no signs of maturation) 4-10 years of age

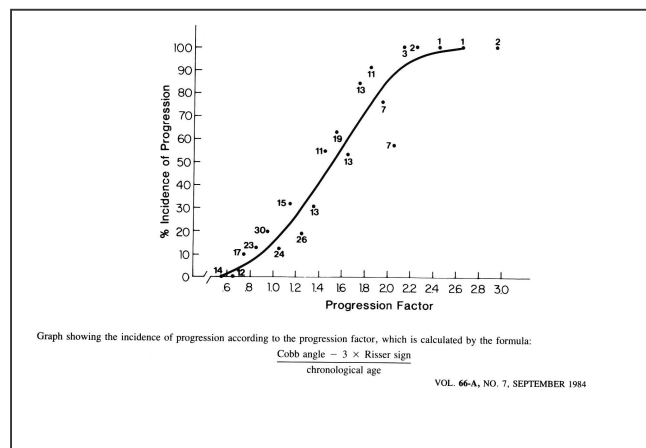
- a. < 20° Cobb: Observation (6 month intervals)
- b. Cobb angle 20-25°: Out patient physiotherapy with treatment free intervals

- c. Cobb more than 25°: Out patient physiotherapy or scoliosis intensive rehabilitation when available and brace (part time 8-16 hours)

II. Children and adolescents, Risser 0-3, clinical signs of maturation

- a. progression risk less than 50%: Observation (3 month intervals)
- b. progression risk 50%: Out patient physiotherapy
- c. progression risk 60%: Out patient physiotherapy, scoliosis intensive rehabilitation when available + relative brace indication (16 – 23 hours).
- d. progression risk 80%: Out patient physiotherapy, scoliosis intensive rehabilitation when available + absolute brace indication (23 hours)

The estimation of the prognostic risk is based on the calculation of Lonstein and Carlson (1984).



Generally the indication for brace treatment is given at Cobb 25° or more and Risser 0.

III. Adolescents presenting with Risser 4

- a. Cobb less than 30° : Observation (6 month intervals)
- b. Cobb 30 - 35° : Out patient physiotherapy
- c. Cobb more than 35° : Out patient physiotherapy, scoliosis intensive rehabilitation when available + brace (part time, 8 - 16 hours)

IV. Adults

- a. Cobb more than 35° : out-patient physiotherapy
- b. Cobb more than 45° : out-patient physiotherapy, scoliosis intensive rehabilitation when available.

V. Adolescents and adults with idiopathic scoliosis and chronic pain: Out patient physiotherapy, scoliosis intensive rehabilitation when available with a special pain programme (multimodal pain concept / behavioural + physical concept)

There may be exceptions from the rules to be made by scoliosis specialists for documented reasons such as:

- severe decompensation
- severe sagittal disturbances (lumbar kyphosis or thoracic lordosis or junctional kyphosis)
- curves with a disproportioned rotation compared to the Cobb angle
- others to be named.

Future modification of proposed modules of treatment may result from prospective controlled trials prepared by SOSORT .

Definitions:

Out patient physiotherapy (OPT):

Exercise sessions at the physiotherapist and home exercise programme.

Scoliosis intensive rehabilitation (SIR):

3 - 4 week intensive programme (4 – 6 hour training sessions / day)

References

WEINSTEIN, S.L.: Natural history. Spine, **24**: 2592-2600, 1999.

STOKES, J.: Die Biomechanik des Rumpfes. In: H.R. Weiß: Wirbelsäulendeformitäten. Konservatives Management. München, Pflaum: 59-77, 2003

WINTER, R.B.: Classification and Terminology. In: Moe's Textbook of Scoliosis and Other Spinal Deformities, Philadelphia Saunders, pp 39-43, 1995.

DANGERFIELD, P.H.: Klassifikation von Wirbelsäulendeformitäten. In: H.R. Weiß: Wirbelsäulendeformitäten. Konservatives Management. München, Pflaum: 78-83, 2003.

LEHNERT-SCHROTH, CH.: Dreidimensionale Skoliosebehandlung. 6. erw. Auflage, Urban/Fischer, München, 2000.

RIGO, M.: Intraobserver reliability of a new classification correlating with brace treatment. *Pediatric Rehabilitation* 7:63, 2004.

NEGRINI S., ANTONINI, GI, CARABALONA, R., MINOZZI, S.: Physical exercises as a treatment for adolescent idiopathic scoliosis. A systematic review. *Pediatric Rehabilitation* 6: 227-235, 2003.

WEISS, H.R., WEISS, G, PETERMANN, F.: Incidence of curvature progression in idiopathic scoliosis patients treated with scoliosis in-patient rehabilitation (SIR): an age- and sex-matched controlled study. *Pediatr. Rehabil.* 2003 Jan-Mar ;6(1) :23-30

RIGO, M., REITER, CH., WEISS, H.R.: Effect of conservative management on the prevalence of surgery in patients with adolescent idiopathic scoliosis. *Pediatric Rehabilitation* 6 :209-214, 2003.

RIGO, M.: 3D Correction of Trunk Deformity in Patients with Idiopathic Scoliosis Using Chêneau Brace. In: I.A.F., Stokes (editor). *Research into Spinal Deformities 2.* (Amsterdam: IOS Press), pp. 362-365, 1999.

LONSTEIN JE, CARLSON JM: The prediction of Curve Progression in untreated idiopathic scoliosis during growth, *J. Bone Joint Surg*, 66-A, 1061 – 1071, 1984

KOTWICKI T, PIETRZAK S, SZULC A: Three-dimensional action of Cheneau brace on thoracolumbar scoliosis. In: A.Tanguy, B.Peuchot (eds) *Research in Spinal Deformities 3. Studies in Health Technology and Informatics* 2002; 88: 226-229.