minutes. Those patients whose symptoms were relieved were offered treatment with carbamezapine in gradually increasing dosage until adequate concentrations were reached in about three weeks—usually 600-1000 mg daily. Patients who showed allergy or intolerance to carbamezapine were treated with diphenylhydantoin in doses up to 400 mg daily. This treatment proved successful, but after withdrawal of the drug the tinnitus slowly returned, so that it has to be given continuously with adequate monitoring of serum concentrations and toxic effects.

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Adolescent idiopathic scoliosis

Over 40 years ago scoliosis occurring in otherwise healthy adolescents, particularly girls, was separated from the spinal curvatures of known cause. The latter included scoliosis associated with tuberculosis, neuromuscular disease, congenital vertebral anomalies, and other rarer causes. At first believed to be rachitic, adolescent scoliosis was later termed "idiopathic" since its aetiology was not known, and it was diagnosed only by eliminating all other possible causes. Moreover, the cause remains unknown today, though its frequency far exceeds that of all other forms of scoliosis put together.

Typically idiopathic scoliosis develops between 10 and 14 years of age, though it is often difficult to be precise about the time of onset. Occasionally the typical "adolescent" pattern of scoliosis may develop as early as the age of 6. From the results of school screening programmes to determine the frequency of scoliosis it would appear that, if only very small curves are noted, then boys and girls are almost equally affected. Nevertheless, particularly in a girl, rapid growth between the years of 10 and 14 may be associated with alarming worsening of the curve, and of patients presenting in the scoliosis clinics the sex ratio tends to be about five girls to one boy.

The prognosis is variable and not always predictable. Again, from the findings of school screening programmes, very small curves—perhaps better thought of only as minor asymmetry of spine—may apparently undergo spontaneous resolution. Thus recent surveys have reported that between 3% and 22% of children examined with such asymmetry have undergone resolution or spontaneous improvement.[1 2] The static nature of some minor "curves" may also be deduced from family surveys carried out in many centres in Britain, Europe, and North America—all of which have identified many adult relatives of both sexes who have had small curves that they were unaware of.[3–5] Nevertheless, since it is impossible to determine which of these minor curves will progress and which will not, it is of the utmost importance that any child with this asymmetry should be carefully observed until she has stopped growing.

Considering only those curves which do progress, we have known for many years that the area of the spine in which the scoliosis develops and also the age of onset are important guides to prognosis.[6] Untreated, all thoracic curves will become worse than lumbar ones, and the higher the thoracic curve the worse it is likely to be. Moreover, the younger the child when the curve starts, the worse the prognosis—the more years she has left to grow, the more years the curve has to become worse. Hence optimum treatment can be given only if the child presents early enough for this to be effective.

Methods of treatment adopted are usually some form of the Milwaukee brace, which alone may be effective in controlling or improving the curve. Scoliosis appearing at a young age (when many years of bracing may be thought undesirable for the child) and all severe curves are likely to require operative correction and fusion of the vertebrae in the area of the curve. The longer a curve has had to progress before effective treatment is undertaken, the more difficult it is to obtain other than minimal correction even by operation. This problem arises because, in addition to the lateral curvature of the spine, the vertebrae have also rotated, and the resulting conspicuous and ugly rib hump is difficult to improve.

On the other hand, a curve in the lumbar area is often small and unnoticed. The cosmetic defect is minor, and even untreated the curve does not usually become severe. The main problem here arises later, when backache develops in adult life owing to osteoarthritis of the intervertebral joints.

Clearly the onset of adolescent idiopathic scoliosis must be detected at the earliest possible moment, and school screening programmes for this purpose are becoming commoner in Britain. The child who has developed even a minor curve should be kept under review at about three-monthly intervals during the growing period so that progression can be detected immediately. There is some genetic component to the aetiology of this disorder, most writers favouring multifactorial inheritance, though some families appear to have a simple autosomal dominant type. Nevertheless, whatever the mode of transmission, some families are at a higher risk than normal of developing scoliosis, and hence all growing children in these families should be subjected to routine screening.

In Britain we are now more aware that adolescent idiopathic scoliosis exists, and many cases are diagnosed and referred to orthopaedic departments by general practitioners and school doctors. The block to effective management does not appear to be at this level. It is tragic that as recently as 1976, writing from the Edinburgh Scoliosis Clinic, James[7] stated: "A 'wait and see' policy based on ignorance of the behaviour of spinal curves is at present the biggest problem in the treatment of scoliosis. . . rarely is the initial diagnosis of scoliosis delayed, it is effective treatment that is withheld."

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