References

- ¹ De Lobo E, Khan M, Tew J. Community study of hypothyroidism in Down's syndrome. *Br Med J* 1980;i:1253.
- ² Baxter RC, Larkins RG, Martin FIR, Heyma P, Miles K, Ryan LY. Down's syndrome and thyroid function in adults. *Lancet* 1975;ii:794-6.
- ³ Whittingham S, Pitt DB, Sharma DL, *et al.* Stress deficiency of the T lymphocyte system exemplified by Down's syndrome. *Lancet* 1977;i:163-6.
- ⁴ Burgio GR, Ugazio AG. Immunity in Down's syndrome. *Eur J Pediatr* 1978;127:293-4.
- ⁵ Gershwin ME, Crinella FM, Castles JJ, Trent JK. Immunologic characteristics of Down's syndrome. *J Ment Defic Res* 1977;21:237-49.

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An adult female with spondyloepiphyseal dysplasia tarda

SUMMARY We report a sporadic adult female with a distinctive variety of spondyloepiphyseal dysplasia tarda characterised by universal platyspondyly, short metacarpals, short metatarsals, genu valgum, mild thoracic kyphoscoliosis, and severe generalised epiphyseal distortion with premature osteoarthritis.

Spondyloepiphyseal dysplasia tarda (SED) is characterised by primary and usually progressive involvement of the spine and epiphyses with onset in later childhood.¹ Most commonly SED is inherited as an X linked recessive trait but genetic heterogeneity appears probable.^{1,2} We report a sporadic female with SED who provides further evidence for heterogeneity in this condition.

Case report

The proband was born in 1934. She was the fifth child of non-consanguineous parents and no other family members are similarly affected. Her father was 39 years old and her mother 32 years old at the time of her birth. She was normal at birth but stopped growing at about 14 years of age. In 1960, aged 26 years, she underwent left total hip replacement because of severe osteoarthritis. This relieved her symptoms, but two years later the prosthesis

became infected and a left pseudarthrosis was created. She was then asymptomatic until 39 years of age when she developed pain in the region of her right hip, and in 1974 required right total hip replacement. The excised femoral head showed severe anatomical distortion in addition to secondary osteoarthritis (fig 1). Since 1980 she has had symptoms from osteoarthritis of the left shoulder and in 1981 she underwent cholecystectomy for gallstones. Her periods started at the age of 16 years and have been regular. She has never been pregnant. Despite her disabilities she has been a full-time sewing machinist since 1954.

Examination at 47 years of age revealed a height of 127 cm, upper segment 62 cm, lower segment 65 cm, arm span 141 cm, and weight 50 kg (fig 2).

FIG 1 Severe osteoarthritis of the right hip at 39 years of age. Pseudarthrosis of left hip.

FIG 2 Patient aged 47 years beside a nurse, height 170 cm.

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FIG 3 Short metacarpals with distorted epiphyses.

FIG 4 Generalised platyspondyly without posterior humping.

Her skull and facies were normal, but her neck was markedly shortened. Cubitus valgus, genu valgum, and short digits owing to short metacarpals were evident (fig 3). Painful limitation of movement of the left shoulder was present, but her other joints had normal mobility. Her intelligence and vision were normal.

Radiographs showed generalised platyspondyly and mild thoracic kyphoscoliosis (fig 4). There was a generalised epiphyseal disturbance with flattening, deformity, and evidence of secondary osteoarthritis. All metacarpals and metatarsals

were shortened. Her forced vital capacity was 2.05 l, with 1.75 l expelled in the first second. The following investigations were within normal limits: full blood count, serum urea and electrolytes, serum calcium, inorganic phosphate and alkaline phosphatase, urine analysis, plasma protein electrophoresis, and electrocardiogram. Quantitative and qualitative urinary excretion of acid mucopolysaccharides were normal. Electron microscopy of a skin biopsy showed no evidence of stored material and cultured skin fibroblasts had normal β -galactosidase activity.

Discussion

Two earlier comprehensive reviews of spondylo-epiphyseal dysplasia have suggested that at least three variants of SEDT exist.^{1,2} The commonest and most clearly delineated variant is inherited as an X linked recessive trait. Affected males have short trunks with kyphosis (adult height about 140 cm), mild osteoarthritis of the hips, and pathognomonic posterior vertebral humping. Less commonly, autosomal dominant or autosomal recessive inheritance may be apparent. These patients have platyspondyly with short but not kyphotic trunks (adult height 150 to 160 cm) and premature osteoarthritis owing to epiphyseal deformity. In contrast to the X linked variant, joint involvement tends to be severe and prosthetic hip replacement has been necessary in some instances.¹ Hands and feet are usually unaffected in the above three variants of SEDT.

Our patient has generalised vertebral and epiphyseal involvement with onset in later childhood and so fulfils the diagnostic criteria for SEDT. In addition, she has short metacarpals, short metatarsals, mild thoracic kyphoscoliosis, genu valgum, and marked short stature (standing height 127 cm). These additional findings are not usual features of the three variants of SEDT as previously outlined, but do bear a striking resemblance to those of an American Negro kindred described by Felman.³ Onset was in later childhood and a father, son, and daughter had short stature, mild thoracic kyphoscoliosis, short metacarpals, short metatarsals, genu valgum, and diffuse epiphyseal abnormalities with severe premature osteoarthritis of the hips. As in Felman's kindred, osteoarthritis of the hips was the major clinical problem in our patient and she was successfully treated with bilateral total hip replacement. In the kindred of Felman, autosomal dominant inheritance was invoked and our patient might thus represent a fresh dominant mutation. In this respect, the raised paternal age could be a significant factor.

Thus, evidence for further heterogeneity of SEDT

is provided and counselling of sporadic cases needs to be undertaken with caution.

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References

- ¹ Spranger J, Langer LO. Spondylo-epiphyseal dysplasias. *Birth Defects* 1974;**10**(9):19-61.
- ² Carter CO, Sutcliffe J. Genetic varieties of spondylo-epiphyseal dysplasia. In: *Symposium Ossium*. Edinburgh, London: Livingstone, 1970:218-24.
- ³ Felman AH. Multiple epiphyseal dysplasia. Three cases with unusual vertebral abnormalities. *Radiology* 1969; **93**:119-25.

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