Ataxia telangiectasia

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'Ataxia telangiectasia' is the name given by Boder and Sedgwick (1958) to an entity characterized by progressive ataxia of cerebellar and extra-pyramidal type with onset in infancy; striking symmetrical telangiectasia affecting the bulbar sclera and the butterfly area of the face and other areas, including ears, palate, chest, and legs; frequent respiratory tract infections, and café-au-lait spots which may or may not be present.

The first case report of this condition was by Louis-Bar (1941), followed by reports from Wells and Shy (1957), Boder and Sedgwick (1958), Centerwall and Miller (1958), Ford (1960), and Robinson (1962). A total of more than 80 cases to date has been documented, a good proportion of them with a strong familial incidence.

We report here the first South African case.

CASE REPORT

HISTORY M.C.R., aged 9 years, presented at the Transvaal Memorial Hospital for Children, Johannesburg, in December, 1962, with the complaint that she 'kept on falling'. She had been born after a normal pregnancy and labour, birth weight being 6 lb. 4 oz. There was no distress after birth and she did not develop jaundice in the neonatal period. She appeared to progress normally until about the age of 6 months, when her mother became aware of the fact that her head was 'loose and floppy' and that she was unable to lift it. She was late in all her milestones; sat only at the age of 13 months and walked at the age of 26 months, always having great difficulty in maintaining her balance. At this stage, she was seen for the first time by a paediatrician who diagnosed her as having cerebral palsy of the cerebellar type and sent her to a cerebral palsy centre where she was treated up to the time of her admission to this hospital.

Her mother, though not quite sure, was of the impression that the dilated vessels in the sclerae were present from birth. On several occasions she was treated for conjunctivitis on this account. The telangiectasia over the bridge of her nose and her cheeks appeared at the age of 6 and on her ears at the age of 8 years. Between the ages of 26 months and 7 years she had recurrent attacks of otitis media, requiring mastoidectomy, and tonsillitis and bronchitis, requiring tonsillectomy and adenoidectomy. She had one episode of gastroenteritis at the age of 13 months for which she was admitted to the Fever Hospital, Johannesburg.

For the past year she has become markedly worse, being almost unable to walk without assistance, her mother stating that she was much more clumsy and her head much more floppy. She has an extremely pleasant disposition and is easy to manage.

The father has married twice and has one son, who is normal, by his first wife. He has five children by his present wife, three other girls and one boy, all of whom are susceptible to recurrent sore throats. All were examined and found to be quite normal, except for the boy, aged 5 years, who had three telangiectatic spots in the distribution of the superior vena cava and one café-au-lait spot but no other stigmata of the disease. A paternal female cousin, J.R., who was thought to have spastic diplegia, died at the age of 6 years of lymphosarcoma. This child's sister, now aged 2½ years, has recently presented at this hospital with mild ataxia, facial grimaces and mild bulbar injection and blocked tear ducts, but no other stigmata of ataxia telangiectasia.

PHYSICAL EXAMINATION At 9 years of age, the patient was of small stature and weight, weighing only 44 lb. There was telangiectasia of the sclerae and of the butterfly area of the face (Figs. 1 and 2), the ears (Fig. 3) and hard palate, and spider naevi were present on the cheeks and hands. Depigmented areas and café-au-lait spots were present on the trunk, particularly the back, with occasional pigmented naevi surrounded by depigmented areas of skin. There were impetiginous spots on the face

FIG. 1. *Telangiectasia of the sclerae.*

FIG. 2

FIG. 3

FIG. 2. *Telangiectasia of the butterfly area of the face.*FIG. 3. *Telangiectasia of the ears.*FIG. 4. *A mask-like face with a slow, fatuous smile.*

and fingers. The ears, pharynx, sinuses, and chest were free of infection. The cardiovascular system and gastrointestinal tract were normal.

Neurological examination revealed a mildly retarded, rather pleasant child with a mask-like face and a tendency for a slow, fatuous smile to develop (Fig. 4). No cranial nerve lesions were noted. Ocular movements were full with no nystagmus. There was a well-marked hippus of the pupils. She had a slurred, staccato speech and her tongue writhed about on protrusion. There was no sensory abnormality. She was grossly ataxic with a broad-based gait (Fig. 4), and dysidiadokokinesia was present. There was no Rombergism. Muscle power was reduced and she was incoordinate with a bilateral intention tremor of the upper and lower limbs. In addition, she had choreiform movements with a 'dinner-fork' deformity on extending her arms and hands and a 'cinema clasp'. She was hypotonic. Tendon reflexes were variable and on various occasions were found to be both diminished and increased.

INVESTIGATIONS A blood count was normal; there were no L.E. cells; the Venereal Disease Reference Laboratory test was negative; a random blood sugar estimation was 101 mg. per 100 ml. and electrolytes and urea levels were normal. Total serum protein was 7.7 g. per 100 ml. (albumin 3.8 g. per 100 ml., α_1 globulin 0.4 g. per 100 ml., α_2 globulin 1.0 g. per 100 ml., β globulin 0.8 g. per 100 ml., γ globulin 1.7 g. per 100 ml.). There was no protein abnormality on immuno-electrophoresis. Liver function tests were normal, the serum aldolase, however, being 53 units (normal controls 10 to 37 units). The serum magnesium level was 2 mEq./l. The urine was clear; no reducing substances and no excess of amino-acid, including phenylpyruvic acid, were detected. The urinary copper was 0.3 μ g./40 ml., which is within the normal range. Urinary follicle-stimulating hormone and 24-hour 17-ketosteroid secretion tests were normal. Radiographs of the chest and skull revealed no abnormality.

The cerebrospinal fluid was quite normal as was the air encephalogram. An electro-encephalogram showed very

little evidence of normal alpha activity, the dominant background frequency being 5 to 6 cycles per second, present in all leads and symmetrical, occasionally even slower. Hyperventilation did not produce any new features, and twitching of the head and neck, which occurred frequently during the recording, was not accompanied by any cerebral discharge.

Smears of cells from the buccal mucosa were chromatin positive. White cell culture revealed the chromosomal karyotype of a normal female. Skin biopsy confirmed the presence of capillary telangiectasia. Muscle biopsy showed no abnormality.

The I.Q. was assessed to be about 78 on the S.A. individual scale, there being a scatter between the ages of 5 and 8. She did not know her left from her right.

DISCUSSION

This case is a typical example of the syndrome first described by Louis-Bar (1941). The similarity of case reports is extraordinarily striking and recognition of a case leaves little doubt as to the diagnosis. There should be no confusion with the Sturge-Weber syndrome, von Hippel-Lindau disease, or van Recklinghausen's disease, as they are each distinctive syndromes, bearing only a superficial resemblance to the syndromes of ataxia telangiectasia. Other diseases which may cause confusion are ataxic cerebral palsy, cerebellar dysgenesis and agenesis, Friedreich's ataxia and Kinnier-Wilson's disease which are all readily differentiated from this disease. The combination of telangiectasia of a particular type with ataxia of a combined cerebellar and extrapyramidal form is diagnostic and confirmation is achieved by the finding of the subsidiary features of recurrent respiratory tract infection and café-au-lait spots. That confusion exists is obvious, for our case was treated for many years in a cerebral palsy centre as a case of cerebellar cerebral palsy, and on several occasions she was subjected to treatment for conjunctivitis for the telangiectasia of the sclerae.

The basic underlying features of this disease may well be the telangiectasia occurring in a neuroectodermal distribution. In the necropsy cases described by Boder and Sedgwick (1958) and Centerwall and Miller (1958), apart from the finding of irregular loss of cerebellar, and in Centerwall and Miller's case, the cerebral cortex, dentate and

olivary nuclear changes and cerebellar Purkinje cell degeneration, enlarged vessels were found in the cerebellar leptomeninges, white matter, olivary and dentate nuclei, and again in Centerwall and Miller's case in the frontal and parietal lobes. These pathological findings may well correspond with the excess of slow-wave activity found in our case on electroencephalographic examination.

Ataxia telangiectasia is sufficiently clinically and pathologically distinctive to be classified as suggested by Boder and Sedgwick (1958) in Kirby's (1951) classification of the ocular phakomatoses, which are tuberose sclerosis, neurofibromatosis, von Hippel-Lindau disease, the Sturge-Weber syndrome, and now ataxia telangiectasia.

SUMMARY

A case of ataxia telangiectasia in a white South African girl, aged 9, is presented. The presentation was typical in that she had telangiectasis of the bulbar conjunctivae, the butterfly area of the face, the ear, the palate, trunk, and arms with ataxia of cerebellar and extra-pyramidal type, recurrent respiratory tract infections, and café-au-lait spots on the trunk. The chromosomal karyotype was normal as was immuno-electrophoresis of gamma globulin. The serum aldolase level was raised. The striking resemblance of all reported cases to each other is stressed.

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