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Accepted 16 April 1983

One-and-a-half syndrome due to polycythaemia

Sir: The "One-and-a-half" syndrome is a peculiar lateral gaze palsy. It combines two defects of horizontal eye movements: a lateral conjugate gaze palsy in one direction (one) and, in the opposite direction, a paralysis of adduction by one eye resulting from an internuclear ophthalmoplegia (and-a-half). Thus, one eye cannot deviate laterally from the midline and the other eye can only be abducted from the midline. The first reported clinicopathological case is that of Fisher.⁴ We have found 22 cases in the literature, with several causes: five have been proven and five were probable infarctions, two gliomas, two astrocytomas, one arteriovenous malformation, three haemorrhage, two probable cases of multiple sclerosis, one ependymoma and one metastatic tumour.¹⁻⁶ We report a case of the one-and-a-half syndrome secondary to polycythaemia.

A 63-year-old man presented with horizontal diplopia. Two years earlier he had a hemiparesis and sensory changes of the right side of the body which regressed in a few days. Examination did not reveal abnormalities other than oculomotor disturbances. With any type and any direction of lateral eye movements, the left eye remained fixed on the midline, while the right eye could only abduct from and return to the midline. In the vertical upward gaze, the right eye showed skew deviation with vertical divergence. Convergence was preserved. The pupillary reflexes were full. Laboratory studies showed: white-cell count was 11·840/mm³, red-cell count was 6·240·000/mm³, Hb 19·8 mg/dl., HCT 58·9% MCV 89%, MCH 30·7%, MCHC 33·7% the platelets count was 311·000/mm³. With the ⁵¹Cr method, the circulating blood volume was found to be increased. A computed tomography scan showed an area of low density in the left parietal region with normal ventricular size; with contrast there were no changes. Chest radiographs were normal. Both carotid and basilar angiograms and ECG were normal. The EEG showed slight slowing in the left temporal area. Intravenous pyelograms revealed two left renal cysts. Two phlebotomies of 400 ml were made. One week later there was complete recovery of the ocular disorder. Two weeks after admission the patient was discharged from hospital with dipyrindamole treatment.

The "one-and-a-half" syndrome usually results from a single, unilateral and relatively small lesion of the dorsal tegmentum in the lower pons.^{1,4} At first the abducens nucleus (VI) and/or the pontine reticular formation are damaged by this lesion and an ipsilateral conjugate gaze palsy is produced. Next damage by the same lesion to the ipsilateral medial longitudinal fasciculus, which lies at the same level or just above the abducens nucleus, accounts for unilateral internuclear ophthalmoplegia. The causes of the syndrome are varied.¹⁻⁶ In our patient, the "one-and-a-half" syndrome resulted from a probable cerebral thrombosis in the vertebral-basilar system secondary to polycythaemia, a condition in which the liability to cerebral thrombosis is increased.^{7,9} As far as we know, the present case is the first description of a "one-and-a-half" syndrome secondary to polycythaemia, a potentially reversible cause.

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Accepted 14 April 1983

Corynebacterium pyogenes meningitis

Sir: *Corynebacterium pyogenes* is a gram positive rod which is associated with suppurative or granulomatous lesions in various domestic animals with a few reported cases implicating human disease. We report what is believed to be the first case of *C. pyogenes* meningitis.

A 76-year-old man was admitted to hospital in a confused state. Over the previous twelve hours he had complained of severe headache, nausea and vomiting. His temperature was 38·0°C; pulse 98/min; blood pressure 180/110/mm Hg; respiration 24 per minute, and he responded slowly to commands. There was neck stiffness and photophobia with no other neurological signs. Acute meningitis was diagnosed and confirmed by lumbar puncture; (table). Chloramphenicol was prescribed as no organisms were identified on direct micro-

Table Lumbar puncture results:

	Day 1	Day 2	Day 18
Appearance	turbid fluid	slightly xanthochromic	clear fluid
Pressure cm	23	23	—
Protein g/l	3.4	4.8	.9
Globulin	mod increase	mod increase	mod increase
Glucose mmol/l	—	—	—
C.S.F. (serum)	4.5 (14.2)	3.5 (13.3)	2.8 (9.0)
Chloride mmol/l	113	—	118
W.C.C. per mm ³	200	100	13
Polymorphs %	66%	—	95%
Lymphocytes %	34%	—	—
R.C.C. per mm ³	180	200	237
Microscopy (Gram and Z.N.)	Negative	Negative	—
Culture	<i>C. pyogenes</i>	<i>C. pyogenes</i>	No growth

scopy of the CSF. No improvement occurred in the next 18 hours and ampicillin and benzylpenicillin were added to the treatment. Twenty-four hours later a gram positive rod appeared on culture and after consultation with the microbiology department, Septrin was prescribed and chloramphenicol was withdrawn. Over the subsequent 24 hours, although he was pyrexial, his conscious level improved. The organism, *C. pyogenes* was shown to be sensitive to Septrin but resistant to benzylpenicillin and ampicillin. However, with the patient's improved clinical state no alteration was made to his drug treatment. He became apyrexial after a further 24 hours and by the ninth day on Septrin was fully conscious. All medication was withdrawn with the exception of Septrin, which was stopped after a negative lumbar puncture the following week (table). Throughout the infection blood cultures were repeatedly negative. The patient was discharged one month after admission following mobilisation.

Some samples of CSF were inoculated into Brewers medium and Robertsons meat broth. The remainder was spun down and streaked onto horse blood agar and chocolate agar kept in 5–10% CO₂. The culture plates were incubated at 37°C. After overnight incubation small pin-point, round, smooth colonies with zones of β haemolysis were isolated in pure culture on blood agar and growth was also seen on chocolate agar plates. The organism was also isolated from sub-culture from Robertsons meat broth. Microscopy of the cultured organisms showed straight gram-positive bacilli with few filamentous forms which stained uniformly and contained no spores. They were non-motile (by the hanging drop method, 22°C and 37°C) and the identification of *C. pyogenes* was based on biochemical tests. A relatively common cause of meningitis, by a gram-positive rod,

is *Listeria monocytogenes* which was excluded by the motility and biochemical tests. These were checked in duplicate in peptone-water sugars with added serum and serum agar sugars from the agar plates and Robertsons meat broth. Catalase, oxidase, indole production, Vogues-Proskauer and acid production from mannitol were negative. The oxidative-fermentative test was fermentation positive and acid production occurred from glucose, lactose, maltose and sucrose. Antibiotic sensitivity tests were carried out on Sensitest agar by paper disc technique. The organism was sensitive to vancomycin, rifampicin, gentamicin, netilmicin, Septrin, trimethoprim, sulphamethoxazole, tetracycline and erythromycin. The organism was resistant to penicillin, ampicillin, chloramphenicol, fucidin, cephaloridine and clindamycin. The MIC of trimethoprim was reported for veterinary strains of *C. pyogenes*¹ as 0.1–10 µg/ml. The concentration of trimethoprim in the CSF of this patient on day 18 was 2.3 µg/ml. *C. pyogenes* has been reported as the causative organism for an increasing list of human disease including subacute bacterial endocarditis, septic arthritis,² empyema,³ abscess formation, complication of frostbite and vulvo-vaginitis.⁴ A report from the National Collection of Type Cultures⁵ stated that six isolates of *C. pyogenes* had been received since 1965, but the sites of isolation were not stated of the species of *Corynebacteria* reported to the PHLS Communicable Disease Surveillance Centre, Colindale, between 1975 and 1982, this is the only case of *C. pyogenes* isolated from CSF.⁶ In this patient the portal of entry and source of infection remained obscure. However, the patient was a retired farmer who had worked with livestock. It was noteworthy that *C. pyogenes* was resistant to the first line antibiotics for meningitis although the organ-

ism has a wide range of sensitivity including Septrin, which was used in the treatment of this patient.

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Primary meningeal melanomatosis: limitations of current diagnostic techniques

Sir: Primary melanomata of the central nervous system are exceedingly rare except in association with giant pigmented cutaneous naevae in children.¹ Their origin is still debated although it is most likely that they arise from melanocytes in the leptomeninges.² However, even after careful post mortem examination, subclinical primary lesions of the skin, choroid, urinary or gastro-intestinal tract cannot be absolutely excluded.

Recent reports have stressed the usefulness of computed tomography (CT) in the diagnosis of tumours involving the leptomeninges and in particular in raising the possibility of melanomatosis.³ Likewise cerebrospinal fluid (CSF) cytology is extensively reported to be of use in the early diagnosis of meningeal malignant infiltrations.⁴ The present case illustrates the difficulties of making an early diagnosis despite the use of both the above mentioned diagnostic techniques.

A 68-year-old retired English milkman presented in January 1982, with a one year history of numbness initially in the right foot which spread to involve the whole leg and weakness in the right leg for two