characteristic of resistant strains associated with certain recognised genetic mutations [8]. The mechanism of resistance to sulfonamides and sulfones involve mutations of dihydrofolate synthase (DHPS) [8]. The mechanisms of resistance to amino-alcohols (quinine, mefloquine and halofantrine) are still unclear [8].

As a result of increased international travel, overseas employment, tourism and globalisation, the chances of multi-drug resistant *P. falciparum* entering in Sri Lanka is likely. With the availability of the vector and the environmental conditions conducive to the growth of the parasite, the emergence of quinine resistant *P. falciparum* is imminent. Hence, the importance of quarantining exposed patients who return to Sri Lanka with features of malaria, and having a high degree of suspicion about existence of multi-drug resistant *P. falciparum* cannot be overemphasised.

**Acknowledgements**

We acknowledge the assistance of Dr. Punsiri Fernando of the Anti-Malaria Campaign of Sri Lanka for advice and for providing the artemisinin.

**References**


**Mirror writing in a patient with Alzheimer disease**

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**Introduction**

Mirror writing is “that variety of script which runs in an opposite direction to the normal, the individual letters also being reversed” [1]. Mirror writing may be transient or long lasting, and may affect single letters or characters, whole words or sentences. Although mirror writing occurs both spontaneously and pathologically, it is generally associated with cerebrovascular lesions in the dominant hemisphere [2].

**Case report**

We describe mirror writing in a 76-year old woman, a natural left-hander who had been forced by her parents to be right-handed. She had been able to mirror write with the left hand voluntarily during childhood. She presented with progressive impairment of recent memory of about 2 year’s duration. She forgets names of friends, and gets disoriented in unfamiliar surroundings. She was well groomed, pleasant and oriented in time and place. Formal cognitive assessment with the Mini Mental State Examination (MMSE) and Cambridge Cognitive Examination (CAMCOG) showed impairment in short term recall and sustained attention associated with executive dysfunction. In addition, judgment was poor, and behaviour slightly disinhibited. Language ability, including word-finding and fluency of expression, was normal. Episodic memory and semantic memory were normal. Visuospatial
normal and there was no evidence of constructional apraxia or agnosia.

She had no left-right disorientation and normally writes with the right hand. When she writes, she switches hands spontaneously and mirror writes with the left hand. This is seen frequently with both spontaneous and dictated writing (Figure 1). There were no localising features to suggest a focal brain lesion. There was no history of head trauma, cerebrovascular accident, or features of Parkinson disease. MRI scan of the brain showed only diffuse atrophy compatible with age. There was no focal atrophy affecting the hippocampal areas or the frontotemporal areas to suggest a specific dementia. Considering the clinical picture, the most probable diagnosis is early Alzheimer disease (AD).

Discussion

Mirror writing is seen in various disorders affecting the central nervous system. Acquired mirror-writing occurs most commonly in right-handed patients who use the left hand for writing following a right hemiplegia. Studies among the elderly in China and Japan have shown an increase in mirror writing in relation to cerebral damage and cognitive dysfunction [3, 4]. A high prevalence of mirror writing has been described in patients with essential tremor, Parkinson disease, and cerebellar disorders [2].

Mirror writing is also seen in people without any known disorder in the central nervous system. It is common as a normal stage when children first learn to write, but very few of them will continue to mirror write as adults [1], and persistent mirror writing is very rare in normal people. Leonardo da Vinci and Lewis Carroll are two well known people who wrote in both normal and mirror scripts [5]. Nevertheless, mirror writing in adults is probably more common than realised, and many with this ability are left-handed. They would naturally adopt normal writing and may have their tendency to mirror write suppressed by others. The reason why mirror writing is usually carried out with the left hand has been attributed to abductive arm movements being easier and better coordinated than adductive movements. Leftward writing has therefore been held to be the natural direction of writing of the left-hander.

![Figure 1](image1.png)

(a) Mirror writing associated with dictated writing (a) and spontaneous writing (b) in this patient with probable AD. Note that during mirror writing the script moves leftward.
A case of hereditary spastic paraplegia with demyelinating polyneuropathy

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(Index words: Absent sensory action potentials markedly prolonged distal motor latencies, reduced nerve conduction velocities)

Introduction

The hereditary spastic paraplegias are a group of heterogeneous disorders characterised by lower limb spasticity. Although most cases represent a ‘pure’ form, variants with additional ‘complicating’ features have been documented [1]. We report a patient with hereditary spastic paraplegia (HSP) having a demyelinating form of polyneuropathy which has not been previously associated with this condition.

Case report

A 14-year old girl presented with difficulty in walking, dysarthria, and learning disability since infancy. A delay of motor milestones had been noticed from the age of 3 months. By the age of 10 years she had a stiff unsteady gait with a tendency to trip, was dysarthric, and had severely impaired school performance. Her symptoms had progressed slowly since then, but there had been no regression of milestones.

Her parents’ marriage was non-consanguineous and her antenatal period was uneventful. Her 10-year old brother has a similar illness with a stiff, unsteady gait, dysarthria, and a learning disability, but is less severely affected. Other family members were reportedly normal.

Examination revealed no dysmorphic features or thickened nerves. The abdomen and cardio-respiratory systems were normal. She had bilateral foot drop, pes cavus deformities, and early wasting of the peroneal muscles. Her gait was spastic and ataxic.

She had no focal cortical signs. Visual acuity and fields were normal, but the left optic disc was pale. The other cranial nerves were normal. Grade I horizontal nystagmus and mild dysdiadochokinesia were noted. There were no wasting of the upper limbs. Her gait was spastic and ataxic.

She had no focal cortical signs. Visual acuity and fields were normal, but the left optic disc was pale. The other cranial nerves were normal. Grade I horizontal nystagmus and mild dysdiadochokinesia were noted. There were no extrapyramidal signs or sensory deficits.

Upper limb tone and reflexes were normal. Muscle power was normal proximally and of MRC grade 4+/-5 in the hands. Both lower limbs were very spastic. Knee jerks were brisk but without clonus. The ankle jerks were exaggerated but less so than the knee jerks. Plantar responses were extensor. Muscle power was grade 4/5 proximally and grade 4/5 distally.

References


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Ceylon Medical Journal