

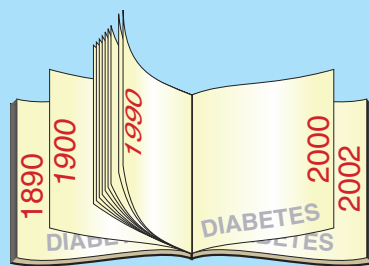
## Hypoglycaemia hemiplegia



Professor  
Robert  
Tattersall

Today's diabetes world is fast-moving and exciting; knowledge is accumulating at an astonishing rate, new discoveries and understanding lead to new ideas and innovations in treating, managing and preventing diabetes. However, there's

nothing new under the sun. To help understand the present, it sometimes helps to examine the past.



Tattersall's Tales will enable readers to do just that. In every issue, Robert Tattersall, renowned diabetes sage and guru, will consider an aspect of diabetes and place it in a suitable historical context. Research, treatment, people and products will all feature.

In this instalment, Robert Tattersall discusses his first hypoglycaemic hemiplegia cases, what the literature says, and gives some useful advice on solving diagnostic problems.

**H**ypoglycaemia can cause virtually any neurological sign or symptom, but the most dramatic manifestation is surely hemiplegia. I first came across this as a house physician in 1968. As we came to the end of the ward round, a 70-year-old man with diabetes, who had been completely normal when I checked him 2 hours earlier, could not speak and was obviously hemiplegic. My boss said words to the effect that such things happened to elderly people with diabetes and moved on to the next bed. After the round, a research registrar suggested I go back and give intravenous glucose. This I did, and to my amazement he recovered speech and movement on the end of the needle.

My second case came when I was researching diabetes in identical twins. The mother of an 8-year-old boy told me how one morning he had woken paralysed down the right side and unable to speak. She rang the GP but before he arrived she managed to force some glucose solution into the boy's mouth whereupon he recovered completely.

The third case I remember was a young nurse who had diabetes. While at home for Christmas she woke one morning unable to speak or move. She was conscious and listened to her mother and physiotherapist sister standing at the side of the bed arguing. The mother wanted to give an injection of insulin while the sister favoured glucagon. Happily the sister prevailed!

Hypoglycaemic hemiplegia was first reported in 1927 (Lindsay and Treacher, 1927). A year later, Ravid, of Ann Arbor, Michigan, reported a man in hospital who had two or possibly three episodes lasting 3 hours and 7 hours respectively (Ravid, 1928). The first affected his right side, but 5 days later he complained of numbness and tingling in the left arm and leg and examination showed a left hemiplegia. Remarkably, 'since the patient was not concerned and it was nearly tea time', he was given a meal which he had difficulty in swallowing. An hour later there had been no improvement and he was given adrenaline

and orange juice with complete recovery.

A literature search shows that since 1964, 28 articles have been published about hypoglycaemic hemiplegia using the American spelling and seven using the English spelling. Is there anything new to say? Not really. The main debating point has always been whether a focal neurological sign produced by hypoglycaemia indicates a structural abnormality in the brain. In 1965 a patient was reported with left-sided weakness and speech disturbance in whom correction of a right carotid stenosis apparently prevented subsequent hypoglycaemic episodes from producing focal signs (Portnoy, 1965). It seems likely that this was coincidental because most reported patients with hypoglycaemic hemiplegia have had normal cerebral angiography (Wallis et al, 1985). I agree with Ravid that hemiplegia which changes sides must be functional, and cases in children support this interpretation.

The most common diagnostic problem arises in elderly people, especially those on oral hypoglycaemic agents in whom the possibility of hypoglycaemia is not considered. Many older people with diabetes have been admitted to hospital with a 'terminal' stroke, only to return home after an injection of glucose. I suggest that anyone with diabetes who appears to have had a stroke should be given intravenous glucose. It cannot do any harm and, as in my first case, the results may be dramatic.

- Lindsay WL, Treacher JH (1927) Amnesia, epileptiform convulsive seizures and hemiparesis as manifestations of insulin shock. *American Journal of Medical Science* **174**: 453-9
- Portnoy HD (1965) Transient ischemic attacks produced by carotid stenosis and hypoglycemia. *Neurology* **15**: 830-2
- Ravid JM (1928) Transient insulin hypoglycemic hemiplegias. *American Journal of Medical Science* **175**: 756-69
- Wallis WE, Donaldson I, Scott RS, Wilson J (1985) Hypoglycemia masquerading as cerebrovascular disease. *Annals of Neurology* **18**: 510-12