Basilar artery aneurysm: an unusual cause of intractable hiccups

ML Li, A Gupta, P Thomas, AJ Richards

INTRODUCTION

This case report describes the presentation, investigation and management of a case of intractable hiccups with a rare cause.

DISCUSSION

Hiccups are defined as involuntary spasm of the diaphragm, followed by sudden closure of the glottis. Hiccups are usually self-limiting but may persist for days or weeks. Intractable hiccups may be the result of gastrointestinal, metabolic or endocrine disorders, structural or functional disturbances of the medulla, disturbances affecting afferent or efferent nerves to the respiratory muscles, drugs (steroids, barbiturates, benzodiazepines), general anaesthesia or psychogenic causes (Howard and Charmes, 1996).

Hiatus hernia and oesophagitis were contributary factors to hiccups in this case, the likely mechanism being the stimulation of visceral afferent fibres of the vagus nerve. However, this is unlikely to be the primary cause because of the temporal association with the subarachnoid haemorrhage. Persistent or frequently occurring hiccups may occur with neurological disease affecting the medulla in the region of the nucleus tractus solitarius, particularly tumour, infarction, haematoma, encephalitis and occasionally meningitis (Al Deeb and Sharif, 1991).

The initial investigations should obviously exclude the more common causes. Brain magnetic resonance imaging (MRI) is a useful investigation in patients with chronic hiccups when gastro-oesophageal lesions are either excluded or too mild to account for an intractable hiccup (Marsot-Dupuch et al, 1995).

MANAGEMENT

The first line of management is to reverse or treat any underlying cause. The management of intractable hiccups can be broadly subdivided into three categories: simple/mechanical techniques, medical (drugs) and surgical techniques.

Simple management

Simple techniques include breath holding, rebreathing into a paper bag and pharyngeal stimulation.

Medical management

Medical intervention includes the use of drugs such as chlorpromazine, antiepileptics, metoclopramide, haloperidol, nifedipine and baclofen (Friedman, 1996). Electrical stimulation to a limited area within the medullary reticular formation, the hic-

CASE REPORT

A 70-year-old retired lorry driver was admitted as an emergency with a 2-day history of moderate amount of haematemesis, nausea, vomiting and intractable hiccups. He was a known hypertensive and 5 years previously had an episode of subarachnoid haemorrhage. Complications required the insertion of a Rickman reservoir shunt. Since the time of the subarachnoid haemorrhage, his hiccups had been almost constant despite taking chlorpromazine tablets 25 mg three times a day.

On examination, he had intractable hiccups. Cardiovascular, respiratory and abdominal examination were normal. Neurological examination revealed a right-sided partial third nerve palsy (with ptosis and pupillary sparing). He also had a right-sided squint operation during childhood. More detailed examination of the cranial nerves revealed mild right-sided glossopharyngeal and hypoglossal nerve palsies. Routine full blood count, blood biochemistry, chest X-ray and abdominal ultrasound scan were normal. Upper gastrointestinal endoscopy revealed a hiatus hernia with mild oesophagitis. He was started on omeprazole.

In view of the neurological findings and past history of subarachnoid bleed, a magnetic resonance imaging brain scan was performed. This revealed a large basilar artery aneurysm with a significant mass effect on the brainstem at the level of the border of fourth ventricle (*Figures 1–3*).

Alternative drug treatment in the form of nifedipine 10 mg three times a day was initiated instead of chlorpromazine and the hiccups resolved completely. On follow-up in the clinic a few months later, there was no recurrence of the hiccups.

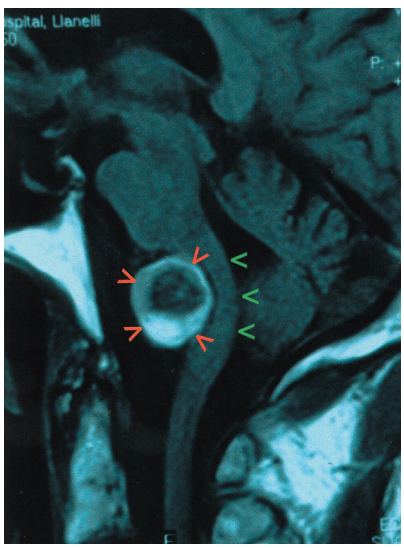

Figure 1. Unenhanced T1-weighted spin echo sagittal image through the brainstem (<) and fourth ventricle showing compressive effect of large basilar aneurysm (<).

Dr ML Li is Senior House Officer, **Dr A Gupta** is Specialist Registrar and **Dr P Thomas** is Consultant in Elderly Care Medicine, and **Dr AJ Richards** is Consultant Radiologist at Prince Philip Hospital, Llanelli SA14 8QF

Correspondence to: Dr P Thomas

cup evolving site, can elicit a hiccup-like reflex, which is actively inhibited through γ-aminobutyric acid (GABA-B) receptors, outlining the importance of the use of baclofen as a drug treatment (Oshima et al, 1998).

Nifedipine antagonizes calcium influx at selected L type calcium channels that are found in presynaptic and postsynaptic elements of central and peripheral nerves (Lipps et al, 1990). Nifedipine and 1,4-dihydropyridine calcium antagonists cross the blood–brain barrier effectively and have been used to control intractable hiccups successfully (Mukhopadhyay et al, 1986; Quigley, 1997). Doses of up to 160 mg of nifedipine have been used effectively (Brigham and Bolin, 1992). This case also responded well to nifedipine.

Figure 2. Contrast enhanced T1-weighted sagittal image showing enhancement of the aneurysm false lumen (<).

Surgical management

When all medical intervention has failed and the hiccups remain chronic and debilitating, diaphragmatic paralysis or phrenic nerve crushing may be used as a last resort.

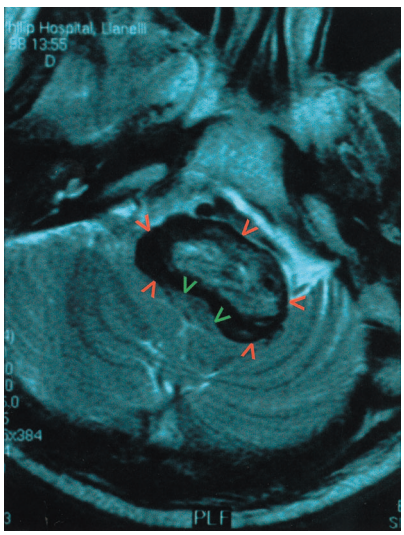

Figure 3. T2-weighted false spin echo axial image through the posterior fossa and cerebellum showing severe compressive effect of basilar artery aneurysm (<) upon the brainstem (<).

CONCLUSIONS

This case report illustrates that when presented with a case of intractable hiccups, the primary objective is to locate the possible cause(s) before initiating treatment. The cause may sometimes be rare and obscure. Because not all underlying causes can be corrected, symptomatic medical treatment with certain drugs may prove to be beneficial. HM

Al Deeb SM, Sharif H (1991) Intractable hiccup induced by brain stem lesion. *J Neurol Sci* **103**: 144–50

Brigham B, Bolin T (1992) High dose nifedipine and fludrocortisone for intractable hiccups. *Med J Aust* **157:** 70

Friedman N (1996) Hiccups: a treatment review. *Pharmacotherapy* **16(6)**: 986–95

Howard R, Charmers R (1996) Causes and treatment of persistent hiccups. *National Med J India* **9(3):** 104–6

Lipps DC, Jabbari B, Mitchell M (1990) Nifedipine for intractable hiccups. *Neurology* **40:** 531–2

Marsot-Dupuch K. Bousson V, Cabane J, Tubiana JM (1995) Intractable hiccups: the role of cerebral MRI in cases without systemic cause. *AJNR* **16(10):** 2093

Mukhopadhyay P, Osman MP, Wajima T et al (1986) Nifedipine for intractable hiccups. *N Engl J Med* **314**: 1256

Oshima T, Sakamato M, Tatsuta H, Arita H (1998) GABAergic inhibition of hiccup-like reflex induced by electrical stimulation in medulla. *Neurosci Res* **30(4)L**: 287–93

Quigley C (1997) Nifedipine for hiccups. *J Pain Symptom Manage* **13(6)**: 313