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Survival without atrial septal defect repair

Sir,

I read with interest the report by Speechly-Dick *et al.*¹ on the long-term surgical outcome of secundum atrial septal defect repair. The association of mitral valve prolapse and atrial septal defect is an interesting one, although the exact cause-and-effect relation is not well understood. The most likely explanation is the altered relation between the size of the left ventricle and that of the mitral valve apparatus in secundum atrial septal defect.² Owing to the left-to-right atrial shunt in atrial septal defect, less blood enters the left ventricle than the right ventricle. Consequently, the left ventricle in subjects with an atrial septal defect tends to be underdeveloped. When the mitral valve becomes relatively 'too big' to be accommodated by the 'small' left ventricle during systole, mitral valve prolapse ensues.² When one waits too long before repairing the atrial septal defect, mitral valve prolapse and the accompanying mitral regurgitation may become irreversible.

Another reason why atrial septal defect once diagnosed should be repaired as early as possible is the risk of atrial fibrillation which is a common late complication of atrial septal defect.³ Once atrial fibrillation develops in patients with atrial septal defect, it is usually permanent, as was well shown by Speechly-Dick *et al.* who reported that atrial fibrillation persisted postoperatively in all of their patients with the arrhythmia preoperatively. The association of atrial fibrillation and stroke is a distinct risk which threatens the long-term prognosis of patients with atrial septal defect,³ and lifelong anticoagulant therapy is indicated.⁴

Although operative mortality in surgical repair of secundum atrial septal defect is extremely low, it is not negligible, being 3.3% in the best hands.⁵ Furthermore, patients undergoing surgical repair of atrial septal defect must consider the extended hospital stay and expense, the need for blood, and all the morbidity and psychological trauma associated with open heart surgery. Fortunately, there is now on the horizon a non-surgical method of closure of atrial septal defect by means of transcatheter delivery of an umbrella device.^{6,7} This non-surgical technique is not only feasible but also promising, provided patients are properly selected.⁷ With increasing experience and longer follow-up, transcatheter closure may well become the standard of care for most patients with secundum atrial septal defects.⁸

Tsung O. Cheng

George Washington University Medical Center,
2150 Pennsylvania Avenue NW,
Washington DC 20037, USA.

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Idiopathic cranial diabetes insipidus associated with idiopathic hypoparathyroidism

Sir,

We report a case of idiopathic cranial diabetes insipidus associated with idiopathic hypoparathyroidism. With one exception,¹ this clinical association has not been reported as a component of the autoimmune polyglandular syndrome.

A 20 year old student presented with a history of polyuria, polydipsia, nocturia and nocturnal enuresis since childhood. He was born of a full-term normal pregnancy through vaginal delivery and there were no perinatal complications. There was no past history of head injury or family history of significance.

On examination, he was slim with an arm span of 71 inches and height of 68 inches. His weight was 50.0 kg. There was no abnormality noted on respiratory, cardiovascular, abdominal or neurological examination. Examination of the eyes and fundi was normal. There was no anosmia.

On 24 hours observation, his oral intake of fluids was 7.0 litres and urine output was 6.0 litres. Basal investigation showed haemoglobin 12.3 g/dl, serum sodium 139 mmol/l, potassium 3.7 mmol/l, creatinine 63 mmol/l, calcium 1.9 mmol/l (normal range: 2.15–2.62), phosphorus 1.63 mmol/l (0.86–1.53), alkaline phosphatase 103 IU/l and albumin 38 g/l.

Basal endocrine investigations showed serum thyroxine 138.8 nmol/l, tri-iodothyronine 1.93 nmol/l, thyroid stimulating hormone (TSH) 0.6 IU/l, follicle stimulating hormone (FSH) 9.4 IU/l, luteinizing hormone (LH) 3.4 IU/l, testosterone 8.0 nmol/l (9.6–38.2), cortisol 0900 hrs 320 nmol/l, growth hormone 5.0 IU/ml (<1.0–7.0), serum parathyroid hormone 4.7 pmol/l (0–5.6). To evaluate polyuria and polydipsia, a short water deprivation test was performed. After 5 hours of water deprivation, his serum osmolality rose from 293 to 299 mosmol/kg and the urine osmolality from 74 mosmol/kg to 182 mosmol/kg; then he was given DDAVP (desmopressin) 1 µg subcutaneously and the urine osmolality rose to 268 mosmol/kg. These results are consistent with a diagnosis of cranial diabetes insipidus. A high resolution computed tomographic scan of the pituitary fossa did not reveal any space-occupying lesion in hypothalamus or pituitary region. He was treated with 10 µg desmopressin twice a day intranasally and is doing well with no polyuria or nocturia.

This patient has cranial diabetes insipidus and hypoparathyroidism with low serum testosterone level and normal range FSH and LH. There was no evidence of granulomatous diseases, histiocytosis or sarcoidosis despite a history of polyuria for more than 10 years, although these may take years to manifest² and diabetes insipidus may be an early manifestation. However, as has been reported,¹ about 30% of these patients have antibodies against vasopressin-secreting cells in the hypothalamus.

The hypocalcaemia and hyperphosphataemia with serum parathyroid hormone levels (mid-molecule RIA), inappropriately low for the level of calcium, indicate hypoparathyroidism which again on clinical grounds appears to be sporadic and idiopathic, and for which the most likely cause is autoimmune.

He also had normal secondary sexual features with borderline low serum testosterone which could indicate the later development of hypogonadotrophic hypogonadism in which usually there is a hypothalamic defect in gonadotrophin releasing hormone release³ and is not commonly associated with disorders of other hypothalamic hormone secretion⁴ including diabetes insipidus.

A. Jabbar

J. Akhter

Department of Medicine,
The Aga Khan University Hospital,
PO Box 3500,
Karachi-74800, Pakistan.

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Long-term dobutamine in heart failure

Sir,

We report here successful long-term outpatient intravenous infusion of dobutamine for intractable congestive heart failure.

A white male sustained an inferior myocardial infarction at the age of 54, complicated by heart failure and pulmonary embolism. Diabetes was then diagnosed and 4 years later intractable heart failure followed further cardiac infarction. After repeated hospital admissions for heart failure over the next 2 years he was referred for heart transplantation. Investigation confirmed end-stage dilated cardiomyopathy due to ischaemic heart disease, but he was not accepted as a transplant candidate. He continued to be admitted every 6 weeks or less with gross

anasarca, acute pulmonary oedema, hypotension and angina, alone or in various combinations.

Eventually he became moribund, with hypotension (blood pressure 90/60 mmHg), hyponatraemia (serum sodium 120 µmol/l), oliguria resistant to high-dose intravenous diuretics in the face of 15-20 kg fluid overload and progressive azotaemia (serum creatinine > 200 µmol/l). His treatment at this time included frusemide 500 mg twice daily, digoxin and captopril 12.5 mg thrice daily.

Dobutamine was started at a dose of 5 µg/kg/minute, with improvement in cardiac output and consequent diuresis. It proved impossible to wean him from dobutamine, so we continued to infuse the undiluted drug in a dose of 250 µg over 12 hours (approximately 5 µg/kg/minute) from a Graseby syringe driver via a Hickman central venous line with an inline bacterial filter. He was discharged self-caring with help from his general practitioner and a district nurse.

Two months later he was content with his quality of life and able to walk slowly from a car to his local shops. A 24-hour electrocardiography tape showed no tachyarrhythmias and his angina did not worsen. He continued to receive continuous dobutamine infusion for over 3 months with no thrombotic nor infective complications of treatment and sustained clinical improvement. He died eventually at home in pulmonary oedema.

Outpatient dobutamine infusion for heart failure has been described in a few patients in the USA¹⁻⁴ but not previously in the UK: the drug has no product licence for chronic undiluted usage. We found the therapy to be simple to establish and maintain, with improvement in exercise tolerance and quality of life, and freedom from hospital admission.

Tolerance to therapy has been reported^{1,3} but this was not apparent in our patient. Neither was there any arrhythmia, despite the use of undiluted dobutamine.

Functional improvement from a mean NYHA grade of 3.8 to 2.6 was reported by Appelfeld *et al.*,¹ similar clinical improvement occurred in our patient. Also, the average reported duration of dobutamine support is 3.2 months,³ comparable to our case.

The main argument against continuous home dobutamine infusion is financial. The drug alone in our case cost approximately £200 per week, with other charges for lines, filters and syringes plus a degree of home supervision. Against this must be set the undoubted clinical benefit and a substantial saving of protracted hospitalization.

In conclusion, home dobutamine is a simple, effective medium-term treatment for severe heart failure: its widespread use may be limited by cost considerations.

Morag Gorrie

Anthony Nicholls

Royal Devon and Exeter Hospital,
Barrack Road,
Exeter EX2 5DW, UK.

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