

# Clearance of severe psoriasis after allogenic bone marrow transplantation

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We describe here a patient with a 20 year history of severe intractable psoriasis which cleared completely after a bone marrow transplant. The case suggests a role for marrow derived T cells in the pathogenesis of psoriasis.

## Case report

A 36 year old white man had a 20 year history of severe intractable psoriasis that required numerous admissions to hospital for inpatient treatment. He had long periods of erythrodermic psoriasis and underwent many forms of treatment, including psoralens and ultraviolet A, methotrexate, razoxane, and etretinate, in an attempt to control his psoriasis. In November 1984 he developed acute myelomonocytic leukaemia; remission was speedily induced using combined chemotherapy with cytarabine, daunorubicin, and thioguanine. His leukaemia remitted, but he continued to suffer severe psoriasis requiring treatment with methotrexate.

In August 1985 he was conditioned for an allogenic bone marrow transplant with cyclophosphamide 60 mg/kg twice and total body irradiation with 14 Gy given in seven fractions. He received a bone marrow transplant from his brother, who did not suffer from psoriasis. The bone marrow T cells in this transplant were depleted using monoclonal antibodies MBG6 and RFT8, and depletion was greater than 99%. Immediately after the bone marrow transplantation his psoriasis disappeared entirely, and he remained free of it despite cessation of cytotoxic and immunosuppressive therapy.

In October 1986 he suffered a relapse of acute myelomonocytic leukaemia. He received a further bone marrow transplant from his brother (this time without depletion of T cells) without induction of remission after chemotherapy with cytarabine and cyclophosphamide. He received cyclosporin at a dose of 400 mg/day after the transplant; the dose was tapered gradually and stopped after 10 months.

Since the initial bone marrow transplant he has remained completely free of psoriasis, and he has had

no further relapse of his myelomonocytic leukaemia. DNA typing performed on peripheral lymphocytes confirmed chimerism, with the DNA type being that of donor.

## Comment

There is growing evidence for the role of cellular immunity in the pathogenesis of psoriasis. One of the earliest histological findings in psoriasis is that of a lymphocytic infiltrate in the dermis, mainly comprising the T helper subtype.<sup>1,2</sup> Studies of circulating lymphocyte subpopulations in psoriasis have yielded conflicting findings, with decreased numbers of T helper cells<sup>2</sup> or T suppressor cells<sup>3</sup> or no abnormality<sup>4</sup> being reported.

Our patient has remained free of psoriasis for some four years and, in the absence of immunosuppressive or other treatment, this seems to indicate that a change in a patient's cellular immunity may bring about long lasting remission of psoriasis, even in a severe case. The importance of this case is that it suggests that eradication of a patient's bone marrow derived immune system and its replacement with a genetically different one can bring about a total remission of severe psoriasis. This points directly to a central role for marrow derived lymphocytes in the pathogenesis of psoriasis. This case reinforces the importance of investigating further the genetic and cell mediated mechanisms that are likely to be important in the pathogenesis of psoriasis. Furthermore, it explains the mechanism whereby selective immunosuppressive drugs, such as cyclosporin A, may work in psoriasis<sup>5</sup> and suggests that further efforts to achieve drug treatment of psoriasis might centre on immunomodulation.

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# Hypoglycaemic attacks treated by ambulance personnel with extended training

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Hypoglycaemia is a common and potentially serious medical emergency. It occurs almost invariably as a complication of treatment with insulin or occasionally sulphonylureas. Patients often treat mild attacks at home, but more severe attacks warrant attending hospital or a visit by a general practitioner.

Our ambulance personnel are instructed how to measure capillary blood glucose concentrations (BM test, Boehringer Mannheim Ltd) and give a 50% dextrose infusion intravenously when oral glucose

cannot be given. We investigated their role in managing hypoglycaemic attacks.

## Methods and results

At the beginning of 1988 there were 14 ambulance-men and women with full extended training.<sup>1</sup> For 12 months beginning on 1 January 1988 all report forms from these crews were studied for cases of hypoglycaemia. Treatment at the scene, patients' responses to treatment, and the final outcomes of the crews' intervention were recorded. We also studied casualty department cards and inpatient notes.

Ambulance personnel attended 35 episodes of hypoglycaemia affecting 31 patients (19 men) (table). One patient did not have diabetes but had taken an overdose of insulin; four patients were non-insulin dependent diabetics; the remainder were taking insulin. The capillary blood glucose concentration before treatment

Condition of patient at scene	Response to treatment				Transported to hospital	
	Improved	No change	No record	No treatment	No	Yes (admitted)
Coma/fitting (n = 19)	17	1	1		6	13 (7)
Confused (n = 10)	8		1	1	1	9 (3)
Aggressive (n = 6)	2		1	3	2	4 (1)
Total (n = 35)	27	1	3	4	9	26 (11)

was recorded in 34 episodes and was 2.2 mmol/l or less. Patients in 19 episodes were described as semiconscious/comatose or fitting, in 10 as confused, and in six as aggressive. Patients were treated on 31 occasions: oral glucose alone was given to two patients, oral glucose and intravenous dextrose to one, and intravenous dextrose alone (10-75 g) to the remainder. No treatment was possible for one patient because of difficult access to the veins or for three patients because of aggressive behaviour. One of these patients received intramuscular glucagon from an attending general practitioner and refused admission to hospital. After being treated by ambulance personnel there was a definite improvement at the scene in patients in 27 cases, the mean length of time at the scene being 30.7 minutes (range 14-50 minutes).

Only 11 of the 35 episodes ended with admission to a hospital ward. In six cases the patient refused to travel to hospital, and in three the general practitioner attended and the ambulance crew was "stood down." In 12 cases patients were taken to the casualty department but were discharged without further treatment or adjustment to their drugs; in three cases patients received further treatment in the casualty department before being discharged.

#### Comment

Severe attacks of hypoglycaemia occur in over a tenth of insulin dependent diabetic patients each year.<sup>2</sup>

Though this is usually reversible by prompt treatment with oral glucose, intramuscular glucagon, or intravenous dextrose, it is still implicated in the deaths of about 5% of diabetics under the age of 50.<sup>3</sup>

Our results show that ambulance personnel with extended training can diagnose and treat most patients with severe hypoglycaemia using an intravenous infusion of 50% dextrose. If intramuscular glucagon had been available more patients could have been treated; this should be carried by all emergency ambulance crews. Glucagon alone, however, may not be as effective or act as rapidly as intravenous dextrose.<sup>4,5</sup>

After treating patients successfully ambulance personnel are obliged to transport patients to hospital unless a general practitioner takes responsibility for the patient or the patient refuses to travel. In this last case ambulance personnel are advised to contact the patient's general practitioner, though there is no formal policy on this. In this study 20 episodes of hypoglycaemia were treated by ambulance personnel alone and patients were not admitted to hospital wards. These patients may not have required transport to hospital if they had been adequately supervised by a relative, if a visit from their general practitioner could have been organised, or if the cause of the hypoglycaemia was obvious.

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## Early experience with an implantable intratracheal oxygen catheter

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Transtracheal oxygen delivery through a fine catheter has recently been reported as an alternative to the use of nasal cannulas or facemasks.<sup>1</sup> Its benefits include lower flow rates and improved comfort and compliance. Conventional tracheal catheters, however, often become infected, fractured, or displaced and are conspicuous.

We report our experience of a recently introduced tunnelled intratracheal catheter designed to overcome these problems.

#### Patients and methods

Five patients (four men, one woman; age range 52-69) had the procedure. All had chronic airflow obstruction with severely impaired pulmonary function (forced expiratory volume in one second mean percentage predicted value 25, range 18.6 to 33.5). They were maximally medically treated and received domiciliary oxygen.

A 43 cm 11 French gauge silicone intratracheal

oxygen catheter was used (Cook Critical Care).<sup>2</sup> The intratracheal end of the catheter was <1 cm and directed caudally. A round, Dacron covered fixation disc was sutured to the external tracheal wall; a further tissue ingrowth cuff was situated two thirds of the way along the catheter to aid fixation in the subcutaneous tunnel.

The implantation procedures were performed under local anaesthesia. The catheter tip entered the trachea between the third and fourth tracheal rings through a small transverse skin incision, which was then closed, and the catheter was drawn through its subcutaneous tunnel to a convenient exit site below the costal margin. It was flushed regularly postoperatively to maintain its patency and to prevent the formation of mucous balls. Oxygen delivery through the catheter was started five to seven days postoperatively, and optimal flow rates at rest and on exertion were measured.

#### Results

The duration of the implantation ranged from 30 to 50 minutes, and the procedure was well tolerated by all patients. Two patients developed small areas of subcutaneous emphysema which resolved within 48 hours. One experienced increased dyspnoea four weeks postoperatively, which resulted from the formation of a 1 cm mucous plug around the intratracheal portion of the catheter because of inadequate flushing and did not subsequently recur after the patient's technique was corrected. Fixation of the