assuming the cost per day of a paediatric bed to be R80 (R78 per day — New Somerset Hospital, December 1983), then the expenditure of R4 501 would have bought R4 500/R80 = 56 paediatric bed days. Assuming that a malnourished child would be in hospital for 18 days, then the amount spent on the 42 children treated at Philani would have paid for the admission of 56/18 = 3 children to hospital for 18 days each. In this way it can be seen that the outpatient treatment of these 42 children was a cost-effective strategy.

Future research

The analysis given in this article has of necessity been limited. A detailed description of the anthropometric status (weight for height) and clinical state of the 42 children studied would have allowed a better assessment of their initial state and also an appreciation of subtler changes in their health status.

Of interest too would be an analysis of the effectiveness of the treatment and the feeding components of the rehabilitation. Just how well do the mothers learn? Would they learn more and retain that which is taught better using other educational approaches? Could it be that the whole benefit is solely due to the attention the children and their mothers get — a ‘Hawthorne’ effect? Answers to questions like these would allow the optimal allocation of resources in such a centre.

Important too would be a complete follow-up of all children attending Philani, including subsequent morbidity and mortality, to gain a clear idea of the effect of the work of the centre in the Crossroads population. A comparison of the cost-effectiveness of different approaches to outpatient nutritional rehabilitation would also be of value.

Conclusion

The group of children studied improved, and most of those who were below the third percentile maintained this improvement and in anthropometric terms justified the expenditure on them. Philani appears to be effective — at moderate cost — in improving the anthropometric status and overall well-being of selected undernourished children in Crossroads, and in preventing the admission of some of these children to hospital.

Our thanks are due to B. Tyeku and N. Nyakaza, who assisted the students in collecting the data, to the Carnegie Corporation of New York for funding the study, and to Dr A. R. P. Walker of the South African Institute for Medical Research for commenting on an earlier draft of the manuscript.

Morbilliform erythrodermic fever with purpura

A benign eruptive fever occurring in 6 elderly women

G. H. FINDLAY

Summary

A febrile exanthem, hitherto unfamiliar, is reported in 6 elderly women. The rash itself is rather characteristic, and remarkable for its striking extent. It is a purpuric, morbilliform eruption dependent upon arteriocapillary damage in the skin, followed by the development of vast sheets of cyanotic erythema and an ultimate scarlatiniform desquamation. Cerebral and renal changes accompany the exanthem. At present the cause is not established. Drugs and viruses are to be considered. The disease is readily halted in the latter stages by systemic corticosteroids.

Towards the end of summer, in March and April 1981, we were confronted for the first time in Pretoria by 3 cases of a distinctive yet unidentifiable febrile exanthem. The 3 patients were elderly white women aged 68, 71 and 74 years. They had not been in contact with one another. The rash itself was impressively widespread, and severe general symptoms merited hospital admission. The clinical features were sufficiently clear-cut for us to recognize a further 3 almost identical cases in the next 2 years.

Although this condition — morbilliform erythrodermic fever with purpura or morbilliform purpuric fever — is yet to be adequately explained, we present an interim account of its features. On showing the case details to the academic Departments of Dermatology at the Universities of the Witwatersrand, Stellenbosch and Cape Town, these were not immediately familiar to the audiences.

Patients and methods

Five of the 6 cases were in white women over 60 years (ages 61, 68, 71, 72 and 74 years). One was a white woman of 32 years.
Morbilliform purpuric fever (each photograph represents a different patient):

**Fig. 1.** The 'macromorbilliform' pattern — dark erythematous to purpuric papules in a loose grouping on an irregular erythematous background (abdomen).

**Fig. 2.** The background erythema becomes irregularly sheetlike, with haphazard clear patches (right breast).

**Fig. 3.** Erythrodermic patches are bordered by folds and tension lines (buttock area).

**Fig. 4.** Extensive conglomeration of morbilliform patches to form erythrodermic sheets (sacrum, buttocks, thighs).

Several of the cases were seen between March and June. All of these patients became ill in the Transvaal, but no particular locality could be implicated. All patients had felt ill before the eruption appeared, usually for 1-5 days, but 2 had felt unwell for longer. The symptoms were 'flu-like, including sore throat, a cold, headache, backache, limb pains, fever with rigors, etc. No pathogens were recovered from their reddened throats, except for 1 case of β-haemolytic streptococcus group A; the antistreptolysin titre was slightly raised in 3 patients.

Genito-urinary tract infections were reported by 3 patients from the preceding few months. In 1 a vulvovaginitis had occurred during convalescence from the ligation of a leaking cerebral aneurysm.

**General clinical features**

All patients were seen after the rash had appeared. It was sometimes severely itchy. There were several associated features, most marked being an apathy and mental confusion. Slight anaemia and mild leucocytosis or leucopenia with elevation of the erythrocyte sedimentation rate (25-40 mm/1st h (Westergren)) were noted. Two patients showed transient haematuria. There was no associated shock or any heart, lung, liver or gastro-intestinal disturbance.
Fig. 5. Certain morbilliform lesions tend to show a more prominent central spot suggestive of erythema multiforme.

Drug history
All the patients had received a diversity of drugs, but the only drug common to 4 of the 6 patients was nifedipine. Whether this drug was withheld or re-administered made no apparent difference to the course of the illness.

Morphology of the exanthem
The exanthem develops in four phases. In sequence these are: (i) small spots; (ii) blotches containing aggregates or conglomerates of the small spots; (iii) confluent red sheets in which morphological detail is lost; and (iv) a final desquamation. In structure the exanthem is therefore morbilliform, but the blotches are larger, darker red, and more liable to extensive confluence than the rash of ordinary measles. For a similar extent of rash, the patients are also less ill than in measles (Figs 1-6).

Small spots. These are 1-2 mm macules or minipapules which are variously pink, oedematous or purpuric, and do not enlarge. They may be solitary but have a tendency to group on an erythematous background. In such a blotchy area the macules may be arranged to form a slightly corymbose or petaloid edge to the lesion. The purpura is then irregularly dotted through the patch. Occasionally there is some central grouping of macules in a blotch but more usually they are irregularly scattered throughout the blotchy patch.

Blotches. Variously shaped islands of blotchy erythema, which are variously pink, oedematous or purpuric, and do not enlarge. They may be solitary but have a tendency to group on an erythematous background. In such a blotchy area the macules may be arranged to form a slightly corymbose or petaloid edge to the lesion. The purpura is then irregularly dotted through the patch. Occasionally there is some central grouping of macules in a blotch but more usually they are irregularly scattered throughout the blotchy patch.

Sheets. Larger areas of purplish red confluent erythema, which can readily involve the entire neck and back, for example, may overrun large parts of the blotchy eruption and obscure all detail. At the borders, a coastline effect of outlying blotchy islands is produced. Unlike other more tenacious erythrodermas, these plaques readily fade to a light brown, leaving purpuric traces behind.

Scale. The lesions show a slight surface wrinkling before shedding a very thin dry scale, which comprises little rings or crinkly patches of the horny layer.
Distribution of the exanthem

The trunk and proximal parts of the limbs were the most regularly affected, although the extent varied considerably. Spread down the limbs, and macules on the palms and soles were seen. Some concentration of the blotches was also noted along the shins and the course of limb tendons. The facial changes were less frequent and rather uncharacteristic. When present they comprised a puffiness of the eyelids, nose, cheeks and ears with patchy redness suggestive of seborrhoeic dermatitis or rosacea.

Skin histopathology

Eighteen biopsy specimens from the 6 patients were examined:

The epidermis showed mild eczematous (spongiotic) changes and mild regenerative signs. An eosinophilic coagulative change affected the cells in the upper malpighian, granular and supragranular areas, leading to the production of a desquamative layer.

In the dermal vascular tree haemorrhage was often present in the upper dermis, associated with swollen vessel endothelium and a few escaped polymorphs. The papillae showed purpuric masses. The subpapillary venous plexus was represented by wide open, uninflamed channels presumed to be responsible for the cyanotic erythema seen clinically. The lesions in the arterio-capillary system appeared to spread from the arterioles. The ascending, candelabra-like arterioles showed a thick, frothy endothelium. The greatest changes were noted along the subpapillary plexus. Here the vessel walls looked shredded and swollen with polymorphs in the lumen, moving through the wall in places. The capillary walls were raggedly swollen, thick, laminated, frothy or granular with occasional bleb-like spaces in the walls. There were no ascertainable inclusions or any fibrinoid. These changes extended to the apices of the papillae.

The most marked accumulations of cellular infiltrates lay in the upper dermis. They consisted of lymphocytes and histiocytes, with a small sprinkling of polymorphs and eosinophils, arranged in perivascular cuffs and scattered diffusely.

An oedematous shredding of fine collagen bundles occurred between the epidermis and the altered subpapillary vessels. The oedema, which was free from blood but could contain lymphocytes, was vacuolated and pocketing in appearance. Bulla formation was not a feature, but a little infrabasal splitting was noted.

Sweat gland cells were at times vacuolated. Nerves were not obviously affected. Lymphatics were hard to identify. Some of the wide spaces described above as venules may have included lymphatics.

Histopathological study indicated the following events, which could possibly be correlated with the clinical appearances: (i) arterio-capillary endothelial damage with haemorrhage and oedema; the small surface spots suggested that the points of a candelabra-pattern were projected on to the clinical lesion at the skin surface to produce a morbilliform appearance; (ii) lateral spread of the inflammatory reaction along the subpapillary plexuses and/or lymphatics could create the erythematous sheets; and (iii) selective epidermal damage in the outer part of the epidermis which would result in desquamation.

Treatment and course

Systemic corticosteroids given late in the first week of the illness brought prompt benefit. The temperature, swelling of the face, erythema, mental confusion and haematuria were relieved. In 1 patient with temporary renal impairment the latter disappeared after corticosteroid treatment. In 1 case corticosteroids had been given without effect at the onset of the rash. There were no relapses within the next few months.

Discussion

This distinctive dermatosis — associated with fever, mucosal congestion, renal impairment, mental confusion and responsiveness to corticosteroids — represents a problem for future study. It looks most like a blend of anaphylactoid purpura, erythema multiforme and the toxic shock syndrome. There is a photograph resembling our account in a recent German textbook; it is described as an 'erythrodermic drug eruption from phenothiazines' but further detail is lacking. Negative blood cultures would not eliminate a bacterial toxin or an immunologically mediated infection. However, the features and general course fit most closely with a so-called 'drug-related vasculitis' with multiple organ systems being affected. Although this picture could be produced by a variety of drugs, the highest common drug factor in our series was nifedipine. In the past year no further cases have been seen.

This publication was supported by the South African Medical Research Council. The author wishes to thank his clinical assistants Drs H. E. Smith, J. A. Hazelhurst and P. C. de Villiers for their investigation of the patients.

REFERENCES