Clinical Topics

Outbreak of Idiopathic Erysipelas in a Psychiatric Hospital

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Summary

In an outbreak of idiopathic erysipelas ten women patients, aged 42-74, in a long-stay unit of a psychiatric hospital were simultaneously affected. Group A streptococci M-type 1 were isolated from two patients with erysipelas and 18 carriers, but subsequent serological tests for type-specific antibody, antistreptolysin O, and anti-deoxyribonuclease B showed that the infection had been widespread in the unit. Treatment with ampicillin proved ineffective and to prevent relapse it was substituted by a standard course of intramuscular penicillin. This seems to be the first epidemic of this type to be reported and certainly the first outbreak of idiopathic erysipelas to be investigated by modern serological techniques.

Introduction

Cases of erysipelas, now seldom recognized, fall into two categories—surgical and idiopathic. The former is associated with puerperal sepsis and streptococcal wound infection and may be confused with streptococcal cellulitis whereas the latter affects mainly the face, scalp, and lower limbs and is predominantly a malady of older people, especially women. Facial erysipelas can be initiated by a streptococcal focus in the upper respiratory mucosa, conjunctiva, or ear while erysipelas of the lower limbs can result from secondary streptococcal infection of an interdigital mycosis.¹ We describe here an outbreak of the idiopathic form.

Patients and Methods

Ten cases of erysipelas occurred between 10 March and 4 May 1973 in three wards (A, B, and C) of a separate five-ward unit for about 300 long-stay female patients aged 40-86 years in a psychiatric hospital with 1,400 beds.

Swabs were taken from the throat, nose, and ears of suspected cases, carriers, and controls in wards A and B on 4 May. All group A streptococci isolated were typed at the Streptococcus Reference Laboratory, Colindale.^{2,3}

Sera were collected from the patients with erysipelas and the carriers in wards A and B as soon as possible after the onset of the outbreak and again 1 month later. Sera were collected also from a sample of non-carriers in wards A and B and a random sample of patients from four other wards in which cases of erysipelas were not seen about four weeks after the onset of the outbreak in ward A.

All the sera were examined for antistreptolysin O (A.S.O.), by the method of Gooder and Williams,⁴ anti-DNAase B, by the micromethod of Nelson *et al.*,⁵ and bactericidal antibody against M-type 1 streptococci.⁶

Results

HISTORY OF OUTBREAK

On 26 April 1973 a 45-year-old mentally defective patient (case 5) became ill with a temperature of 99°F (37.5°C) and a red swelling on the left side of the face. She had been treated with oral ampicillin 500 mg six hourly for two days without improvement before bacteriological investigations were begun. Ear, throat, and nose swabs were taken and the nose swab produced a heavy growth of group A streptococci. Treatment with intramuscular penicillin G (0.6 g followed by 0.3 g six hourly for 10 days) produced bacteriological reversion within 48 hours. During the next four days four more patients in ward A (cases 6, 7, 8, and 9) developed clinically similar illnesses and were given the standard course of penicillin (table I). When swabbed subsequently no streptococci were isolated.

TABLE I—Course of Outbreak of Erysipelas

Date	Ward A	Ward B	Ward C
10/3	Case 1		
1/4		Case 2	
21/4		Case 3	
24/4		Case 4	
26/4	Case 5*		
28/4	Cases 6, 7, and 8		
29/4	Case 9		
4/5			Case 10
8/5	Contacts screened: 12 carriers identified†	Contacts screened: 6 carriers identified†	
11/5	Relapse, case 1*		

*Group A streptococci of M-type 1 were isolated.

†Streptococci were all of M-type 1.

On 30 April three patients in ward B (cases 2, 3, and 4) were found to have peeling lesions of the face and a similar clinical history. No streptococci were isolated from nose, throat, ear, or lesions, but it was decided to administer the standard course of penicillin. In ward C a further patient

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(case 10) was found to have a raised red non-tender swelling of the lateral side of the leg noticed on 4 May, which had not responded to ampicillin. Swabs taken from nose, throat, ear, and the lesion were negative, but on changing the treatment to intramuscular penicillin G (as above) there was clinical improvement within 48 hours.

On 11 May another patient on ward A (case 1) presented with a red swelling on the face. She had suffered a similar illness on 10 March and had been treated on that occasion with ampicillin. The relapse was severe and a profuse growth of group A streptococci was obtained from ear, nose, and throat swabs. Though the results of screening of cases and contacts in wards A and B for group A streptococci was not yet complete mass prophylaxis with penicillin was begun. Contacts and known carriers among the patients were given the standard course of intramuscular penicillin. The nursing and domestic staff—though no carriers had yet been found among them—were asked to take oral penicillin for at least five days. This effectively brought the outbreak to a close.

CLINICAL FEATURES OF THE ILLNESS

Nine patients had a raised red patch with a sharply circumscribed edge affecting the bridge of the nose, the eyelids, and one or both cheeks and extending in some cases to the angle of the jaw. Though the appearance was characteristic of idiopathic erysipelas (see fig.) this diagnosis did not occur to junior members of the staff, who had not seen the condition

Case 1 in relapse. Typical skin lesion, of butterfly distribution, is shown.

before. The lesions were not noticeably tender, but there were complaints of tightness and burning of the skin and sore eyes. Desquamation was often seen as the rash faded while crusts formed on the skin of those more severe cases who had de-

veloped blisters. Constitutional disturbance and fever up to 102°F (39°C) were common and there was an occasional complaint of sore throat or earache. In two cases examination of the ear showed no abnormality, and there were no reports of ear discharge.

One patient (case 10) who presented with erysipelas of the leg suffered a relapse five months later which rapidly responded to penicillin. She was afterwards noted to have an interdigital mycosis from which *Candida spp.* were isolated but no streptococci.

None of the carriers subsequently developed clinical illness and none of the patients were later found to have evidence of nephritis or rheumatic fever.

LABORATORY FINDINGS

The group A streptococci isolated from two erysipelas patients and from 12 carriers in ward A and six in ward B were all members of M-type 1 (table II). Carriage in ward A was mainly in the nose and ear. Group A streptococci were not isolated from any of the nursing or domestic staff in wards A and B.

An A.S.O. titre of > 200 U/ml, an anti-DNAase B titre of > 250 U/ml, or both were considered to be evidence of recent streptococcal infection. Such evidence was obtained for nine out of 10 patients with erysipelas, 16 out of 18 carriers of type 1 streptococci, and 12 out of 19 non-carriers in wards A and B but in only nine out of 24 patients in other wards in which cases of erysipelas had not been diagnosed. Few of the patients with erysipelas showed high titres of A.S.O. and most of the evidence of streptococcal infection came from the anti-DNAase B test. Average titres in the patients with erysipelas, the streptococci carriers, and the non-carriers in wards A and B were similar, but in the 24 control patients they were much lower.

Antibody against type 1 M-protein was not detected in any of the patients with erysipelas in ward A but was present in two of the 3 patients in ward B (see table II). It was also found in 11 out of 18 carriers of type 1 streptococci from wards A and B and in 6 out of 19 non-carriers in these wards but in only two of the 24 controls from unaffected wards.

Discussion

This epidemic was unusual in that idiopathic erysipelas generally occurs sporadically and without obvious transmission from patient to patient.⁷ Evidence that the outbreak was due to streptococcal infection with group A M-type 1 is suggestive but not complete. The strain was isolated from only two of the patients with facial erysipelas (cases 1 and 5) but all except two had received an effective antibiotic before swabs were taken or were in a late stage of convalescence when first recognized. Type-specific antibody to M-type 1 was also present in two out of three convalescent patients who had not received an effective antibiotic in the acute stage of the disease (cases 2 and 3). In addition all clinical cases,

TABLE II—Laboratory Findings in Patients with Erysipelas and Ward Contacts

Ward	Patients				Contacts					
	No. with Clinical Erysipelas	No. Yielding Type 1 Streptococci	No. with Serum Titre of A.S.O. ≥ 200 or Anti-DNAase B ≥ 250	No. with Type 1 Antibody in Serum	No. in Ward	No. Swabbed	No. with Type 1 Streptococci in swabs of:			
							Nose	Throat	Ear	Total
A	6	2	5	0	52	52	5	1	7	12
B	3	0	2*	2	51	51	1	4	1	6
C	1	0	1	0	44	0				

*One more patient was found to be positive when a second serum sample was tested.

with the exception of case 7, were shown to have suffered from recent streptococcal infection by virtue of a raised titre of A.S.O. or anti-DNAase B or both, even though effective antibiotic therapy had been given before the sera were collected.

The raised red lesions might have been confused with streptococcal cellulitis, especially in case 10, but cellulitis has a diffuse, spreading edge, is painful to touch, and often suppurates. The lesions described here had a raised and sharply circumscribed edge and were not noticeably tender—apart from complaints of burning and tightness of the skin. Direct isolation of streptococci from the skin lesion was not attempted before antibiotic treatment had been given. This is seldom successful in erysipelas unless fluid withdrawn from blisters or from subcutaneous tissue is cultured.⁸ In facial erysipelas swabs taken from the nose, throat, and ear are all more likely to yield positive results.

Though these clinical and laboratory findings supported a diagnosis of idiopathic erysipelas it is curious that so uncommon a disease should have affected several patients simultaneously. The patients affected in this outbreak were of the sex and age group especially liable to develop erysipelas and the segregation of so many susceptible people in an abnormally secluded environment might be expected to encourage

widespread and recurrent streptococcal infection once a virulent strain had been introduced. The initial treatment of the patients with ampicillin which failed to eliminate the streptococcus may have influenced the spread of infection by delaying the subsequent successful treatment with penicillin G.

The laboratory findings emphasize that even retrospective serological studies may supply useful evidence of streptococcal aetiology.

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Surgery of Violence

III. Intensive Care of Patients with Bomb Blast and Gunshot Injuries

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Since August 1969 Northern Ireland in general and Belfast in particular has been the site of recurrent episodes of civil disturbances. This article deals with the management of some of the more seriously injured casualties who have been admitted to the intensive care unit of the Royal Victoria Hospital.

The 12-bedded intensive care unit was opened in October 1970 and was originally designed for the care of the critically ill patients of the hospital and to provide a regional service for the management of respiratory insufficiency. The onset of civil disturbances has resulted in a considerable change of emphasis in that the staff of the unit are closely involved in resuscitation in the accident and emergency centre of the hospital and in the care of patients with gunshot wounds and severe injuries resulting from bomb blasts.

The situation of the intensive care unit (I.C.U.) in a hospital complex is of great importance. In a hospital which is concerned with the treatment of major trauma it is best positioned beside the accident and emergency department (fig. 1). This allows the staff of the I.C.U. to take part in resuscitation from the beginning and to establish some continuity in the care of the

FIG. 1—Position of the intensive care unit in relation to the accident and emergency department.

patients. It also has the advantage that when many seriously injured patients are brought to the resuscitation room simultaneously they can be rapidly transferred to the I.C.U. for further resuscitation and assessment. This provides an acceptable outlet and avoids a bottleneck in the casualty department.

The unit occupies a space of approximately 7500 ft² (700 m²), with six beds on an open plan and six single rooms. There is an additional room which is occupied by a hyperbaric oxygen chamber but which can be used for other purposes should the

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