Bullous impetigo in homosexual men—a risk marker for HIV-1 infection?

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Abstract

Objective—To determine the incidence of bullous impetigo in a group of homosexual men at high risk of HIV-1 infection.


Setting—A private primary care and STD clinic in Sydney, Australia.

Subjects—88 homosexual men documented to seroconvert to HIV-1, and 37 homosexual controls who had practised unprotected anal intercourse with another man known to be HIV-1 positive but who remained HIV-1 negative.

Main outcome measure—Incidence of bullous impetigo.

Results—The crude annual incidence of bullous impetigo was 0.015 in subjects while they remained HIV-1 negative (10 cases) and 0.045 in early HIV-1 positive subjects (2 cases). Overall, 9% of the HIV-1 seroconverters and 9% of the HIV-1 negative controls were documented as suffering bullous impetigo over a mean of 29–2 and 39–3 months, respectively.

Conclusions—Bullous impetigo in an adult could prove to be a clinical indication that a person is either infected with HIV-1 or is in close (possibly sexual) contact with a person with HIV-1 infection. If true, the recognition of bullous impetigo could provide an opportunity for behavioural intervention to limit the spread of HIV-1.

Introduction

Bullous impetigo is a cutaneous eruption usually due to phage group II strains of *Staphylococcus aureus* characterised by clusters of flaccid bullae containing purulent fluid 5mm–8mm in diameter. These bullae rupture within a few days to leave regular circular or oval superficial erosions, most commonly in flexural areas. At presentation, bullae are usually in various stages of their natural history (see fig). Entry of the organism may also require some pre-existing skin pathology.1

Clinically, bullous impetigo is easily distinguished from lesions caused by herpes simplex virus (HSV) which are smaller and more painful. HSV lesions may also be accompanied by systemic or regional symptoms. However, bacteriological testing may be required to distinguish bullous impetigo from superficial pemphigus.2

Bullous impetigo is mainly a seasonal disease of early childhood1 and was previously rare in adults. Reports of bullous impetigo, as well as other cutaneous staphylococcal conditions, in homosexual men with proven human immunodeficiency virus type 1 (HIV-1) infection12–17 suggested that HIV-1 infection played a causal role.

An analysis of bacterial pathogenesis identifies several important mechanisms: adherence to host sites, penetration of anatomic barriers, disruption or avoidance of the host humoral defences, avoidance or inactivation of phagocytic cells, and production of toxins.9 Selective immunodeficiencies, involving immunoglobulins and/or defective neutrophil function, predispose to staphylococcal disease.10–13 B-cell abnormalities, namely a poor antibody response to novel antigens in the face of high immunoglobulin levels, are common in HIV-1 infection;11,17 and neutrophil function is also impaired.16

However, the associations between HIV-1 infection and bullous impetigo in homosexually-active men may be both direct and indirect. We report below incidental findings which suggest that sexual contact with a person with HIV-1 infection may be a risk factor for bullous impetigo in HIV-1 negative persons.

Subjects and methods

Study group

The study group comprised every homosexually-active man attending Taylor Square Private Clinic, a private primary care and sexually transmissible disease clinic in central Sydney. Studies of clinical and laboratory findings included a retrospective study of patients attending the Sydney Sexual Health Centre, Sydney Hospital, PO Box 1614, Sydney, 2001, Australia. Procedures were approved by the Ethics Committee of the Randwick Area Health District, University of Sydney. People were eligible for study if they were 18 years of age or older and had attended the Sydney Sexual Health Centre within the past 6 months. Of the 121 people seen at the clinic during the study period, 88 had HIV-1 infection. Of these 88 people, 47 had progressive HIV disease, 16 seroconverted, and 13 were HIV-1 negative. The remaining 12 people had other diagnoses when they attended the clinic.

Figure Bullous impetigo in an HIV negative homosexual man. An intact bulla is present in his perineum, erosions left by ruptured bullae are on his left inner thigh, and folliculitis is present on his right inner thigh.
active men. The mean age of the group as a whole in the mid-point of the study period (1984–1989) was 30.9 years (range 16–59 years), which was similar to the subset of men with bullous impetigo (31-2 years; range 21–42 years).

**Incidence of bullous impetigo**

During the study period, the 88 seroconverters were monitored for a mean of 29.2 months: 23-2 months prior to HIV-1 seroconversion and six months after seroconversion. The HIV-1 negative controls were followed for a mean of 39-3 months. Thus the 10 cases of bullous impetigo detected in subjects while they remained HIV-1 negative and the two cases in (early) HIV-1 positive subjects (table) equated with crude annual incidences of 0.015 and 0.045 respectively. Overall, 9% of the seroconverters and 9% of the controls were documented as suffering from bullous impetigo at some stage.

**Clinical features and response to therapy**

The groin was the preponderant site of the bullous impetigo lesions (table). However, as some patients presented because they thought these were due to HSV infection, this may be a biased finding. Local folliculitis accompanied most of the lesions. All lesions responded rapidly to short courses of oral flucloxacillin or erythromycin (4-6 days) and/or topical chlorhexidine, with only one recurrence of bullous impetigo in one subject (number 10; table) after eight months. Regular sexual partners were also recommended to use topical chlorhexidine.

Three subjects required subsequent treatment for other culture-confirmed staphylococcal disease over the next 3 to 34 months (all after HIV-1 seroconversion). These comprised one episode of each of the following—stye, cellulitis/folliculitis of the buttock, pubic folliculitis, and a nipple infection. Subject number 3 (table) had anorectal gonorrhoea concurrently with his perianal bullous impetigo.

**Discussion**

We were surprised by this finding of a significant incidence of bullous impetigo, an otherwise rare condition in HIV-1 negative adults. Moreover, because it is often a mild and self-limiting condition or some patients may have sought treatment for bullous impetigo elsewhere, these incidence data should be seen as a minimum for this high risk HIV-1 negative population. Interestingly, a previous study had found a comparable incidence of bullous impetigo in HIV-1 negative homosexual men (though less than in HIV-1 positive men) and none in heterosexual controls.5

With the possible exception of subject number 2 (table), whose lesions preceded a primary HIV-1 illness by five weeks, the temporal relationship between bullous impetigo and HIV-1 seroconversion did not imply that the condition had any direct role in facilitating the transmission of HIV-1.

One explanation for the appearance of

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### Table: Clinical and laboratory features of homosexually active men with bullous impetigo

<table>
<thead>
<tr>
<th>Subject number</th>
<th>Month/year of bullous impetigo</th>
<th>Weeks before (−) or after (+) HIV-1 seroconversion illness</th>
<th>Site</th>
<th>Culture for S. aureus</th>
<th>Culture for HSV</th>
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<tbody>
<tr>
<td>HIV-1 seroconverters:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>9/84</td>
<td>−234</td>
<td>axilla</td>
<td>+</td>
<td>ND</td>
</tr>
<tr>
<td>2</td>
<td>9/84</td>
<td>−5</td>
<td>groin (bilateral)</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>3</td>
<td>11/84</td>
<td>−208</td>
<td>perianal</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>4</td>
<td>7/85</td>
<td>−19</td>
<td>axilla (bilateral)</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>5</td>
<td>9/85</td>
<td>+24</td>
<td>groin</td>
<td>+</td>
<td>ND</td>
</tr>
<tr>
<td>6</td>
<td>6/86</td>
<td>−40</td>
<td>axilla</td>
<td>+</td>
<td>ND</td>
</tr>
<tr>
<td>7</td>
<td>10/87</td>
<td>+9*</td>
<td>groin (bilateral)</td>
<td>+</td>
<td>ND</td>
</tr>
<tr>
<td>8</td>
<td>4/88</td>
<td>−17</td>
<td>groin</td>
<td>+</td>
<td>ND</td>
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<tr>
<td>HIV-1 negative controls:</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>10/84</td>
<td>NA</td>
<td>groin (bilateral)</td>
<td>+</td>
<td>−</td>
</tr>
<tr>
<td>10</td>
<td>4/85</td>
<td>NA</td>
<td>groin</td>
<td>+</td>
<td>ND</td>
</tr>
<tr>
<td>(first episode)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>12/85</td>
<td>NA</td>
<td>groin</td>
<td>ND</td>
<td>ND</td>
</tr>
<tr>
<td>(second episode)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1/88</td>
<td>NA</td>
<td>groin</td>
<td>+</td>
<td>ND</td>
</tr>
</tbody>
</table>

ND = not done, NA = not applicable, + = positive, − = negative.

*Subject 7 seroconverted to HIV-1 asymptomatically. His time of seroconversion was arbitrarily assigned to the mid-point between his last negative and first positive HIV-1 tests (18 weeks apart).
Bullous impetigo in HIV-1 negative homosexual men could be immune dysfunction, possibly due to the immunosuppressive effect of viruses of the herpes family.¹⁸¹⁹ However, these findings are controversial.²⁰

As, by definition, all of our HIV-1 negative subjects were sexual partners of men with HIV-1 infection, it seems plausible that bullous impetigo in this group was a consequence of close contact with high levels of S. aureus carriage in their partners. Thus, the diagnosis of this condition in an adult could prove to be a clinical indication that a person is either infected with HIV-1 or is in close (possibly sexual) contact with somebody with HIV-1 infection. In either instance, the recognition of bullous impetigo could provide an opportunity for behavioural intervention to limit the spread of HIV-1.

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