

Letter to the Editor

Transmission of Scabies in a Rural Community

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In a recent seminar in The Lancet [1], we pointed out discrepancies between industrialized and developing countries in the clinical features and epidemiological characteristics of scabies. We concluded that 320 years after the identification of the causative organism, *Sarcoptes scabiei*, the factors contributing to a high incidence of scabies in vulnerable population groups remain enigmatic. In 1985, Mellanby [2] tried to summarize the knowledge on the epidemiology of scabies in a memorable poem:

Recondite research on Sarcoptes
Has revealed that infections begin
At home with your wives and your children
Or when you are living in sin
Except in the case of the clergy
We accomplish remarkable feats
And catch scabies and crabs
From door handles and cabs
And from blankets and lavatory seats.

There is convincing evidence that children and immunocompromised individuals are particularly susceptible to infestation with *S. scabiei* and that fomites play only a negligible role in transmission [3]. However, the assumption, re-iterated in a recent review in the New England Journal of Medicine [4], that in young adults scabies is predominantly a sexually-transmitted disease and that sexual transmission is the most common source of the infestation [2,5,6] has never been substantiated by appropriate data, except in particular settings, such as sexually-transmitted-disease (STD) clinics in New York City and St. Louis in the 1980s and Spanish travelers having intercourse with commercial sex workers in Cuba [7,8].

We used population-based data from an endemic community in Alagoas, in northeast Brazil to scrutinize this issue. In June/July and October/November 2003, the population of Feliz Deserto, a small rural community, was examined for scabies, pediculosis, cutaneous larva migrans and tungiasis. A total of 196 cases of scabies were detected

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during the two door-to-door surveys, giving an average point prevalence of 9.8%. We supposed that if in this setting scabies is sexually transmitted in young adults, this should be reflected by a characteristic sex and age-specific distribution, i.e. scabies should occur more often in sexually-active males than in other population groups. Differences in clinical features would also be expected between age groups, particularly regarding the topographic distribution of lesions [5,7,9]. Patients were divided into three groups: children <15 years, sexually active adolescents and adults of both sexes (15 to 49 years), and older individuals. Lesions were grouped according to body areas that would presumably be exposed or not exposed to *S. scabiei* during sexual intercourse. The diagnosis was made based on established clinical criteria [10].

The prevalence of scabies in the three age groups was 15.5, 3.7 and 6.1%, respectively, and a significant difference between the sexes was found only in individuals of reproductive age: males 1.5% versus females 5.2% ($p=0.012$). The total number of lesions followed an identical pattern: children (median = 12) were followed by the elderly (median = 9) and the sexually active population (median = 8; $p=0.007$). In male and female patients, the various body areas were similarly affected, irrespective of the age group, and there was no difference between the ventral and dorsal part of the body (Table 1). Moreover, the types of lesions (in descending order of frequency: papules, crusted papules, macules, vesicles, excoriations) did not differ between age groups or sexes, nor did the ratio of primary (papules, crusted papules, vesicles, macules) to secondary lesions (excoriations, secondary infection).

Although in northeast Brazil, sexually active males are usually promiscuous (Jackson 2006, unpublished data), we found no evidence in this endemic community that the high prevalence of scabies is related to sexual intercourse. Adolescent/adult males were not more commonly infested than females; in fact the prevalence was three times higher in women. The clinical presentations also did not vary between sexes. In addition, children and the elderly were more frequently infested than patients of reproductive age. In a study on patients from an urban STD clinic, Felman (1985) [7] showed that the genitals, the abdomen and the buttocks were affected whenever *S. scabiei* was transmitted through sexual intercourse. This makes sense, as presumably, after transmission from one person to another, mites travel only very short distances on the skin and start to burrow into the epidermis of the new host rapidly.

Table 1. Topographic areas affected, age and sex of 196 scabies patients with a total of 2,466 lesions

| Body part affected | Number of patients (%) | | | | | |
|--------------------|------------------------|-----------|-----------|-----------|-----------|-----------|
| | 0-14 | | 15-49 | | ≥50 years | |
| | Male | Female | Male | Female | Male | Female |
| Upper part | 72 (96.0) | 71 (89.9) | 5 (100.0) | 21 (80.8) | 4 (100.0) | 7 (100.0) |
| Middle part | 68 (90.7) | 72 (91.1) | 5 (100.0) | 25 (96.1) | 4 (100.0) | 7 (100.0) |
| Lower part | 40 (53.3) | 46 (58.2) | 2 (40.0) | 11 (42.3) | 3 (75.0) | 1 (14.3) |
| Ventral | 68 (90.7) | 70 (88.6) | 5 (100.0) | 24 (92.3) | 4 (100.0) | 4 (57.1) |
| Dorsal | 50 (66.7) | 53 (67.1) | 3 (60.0) | 20 (76.9) | 3 (75.0) | 4 (57.1) |

Upper part: upper extremity front of thorax, neck, head, back. Middle part: abdomen, genitals, inguinal area, inner sides of thighs, buttocks. Lower part: lower extremity (except inner sides of thighs). Ventral: abdomen, genital area, inguinal area, inner sides of thighs. Dorsal: back, buttocks.

We conclude that in this endemic community, scabies is predominantly a disease of children and their mothers, which is transmitted essentially by close body contact. This is common in the tropics, as small children wear only diapers or slips and are carried around by elder siblings or their mothers, children and adults frequently share beds, and during both day and night large parts of the body surface are not covered by textiles. A preponderance of the female sex was also observed in Great Britain at the beginning of the 20th century, when girls and women in lower and middle-class families more commonly shared beds than boys and men [2]. As this community resembles rural communities in many developing countries where scabies is endemic, we suggest that in these settings sexual transmission of scabies plays only a negligible role and that control measures should focus on children and the female sex.

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