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Control of scabies outbreaks in an Italian hospital: An information-centered management strategy

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Background: Scabies is a dermatologic infestation caused by *Sarcoptes scabiei*. In industrialized countries, hospitals and other health structures can sometimes be hit. The optimal management of scabies outbreaks still has to be established, mass prophylaxis being one possible option.

Methods: To identify the optimal approach to containing this re-emerging disease, a local health authority in Lombardy, Northern Italy, carried out an epidemiologic study into 2 scabies epidemics that took place from September to December 2012 in a 600-bed hospital with 26,000 admissions a year.

Results: Over a 3-month period, there were 12 cases of scabies on 4 wards; 43 contacts received prophylaxis. When the first cases were identified, an information campaign involving all hospital personnel was immediately set up. Regular staff meetings were organized, and information leaflets were distributed to patients. Family doctors of discharged patients were informed of the outbreak.

Conclusion: A management model based on an information-centered strategy was used in place of mass prophylaxis to deal with scabies epidemics. The success of this approach was confirmed by the managers of the hospital involved (reduced expenditure for prophylactic drugs) and by hospital staff who did not have to deal with potential drug adverse effects.

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Scabies is a dermatologic infestation caused by the *Sarcoptes scabiei* mite. The worldwide prevalence has been estimated at approximately 300 million cases a year, affecting all ages and social classes.¹ In industrialized countries, scabies sometimes presents with small epidemics within families or close communities. Schools, prisons, hospitals, and other health structures can also be hit and, in particular, long-term health facilities.^{2,3}

During hospital scabies epidemics, health authorities must deal with the problem of exposure of health care workers (HCWs). HCWs are often the first to be diagnosed with the infection rather than the patients affected by scabies themselves. These diagnoses announce the presence of the infection among patients, some of whom may be asymptomatic. Indeed, these patients are often not

self-sufficient and/or have an impaired immune system. The risk of infection and the awareness of working in an environment at risk can, therefore, have a negative effect on the quality of assistance given to particular types of patient.^{4,5}

Whereas data for Italy are not available or up to date, the infectious diseases surveillance system in the Region of Lombardy reported an incidence for 2011 of 11 cases per 100,000 of the population, mainly affecting children under the age of 5 years. In 2012, this decreased to 9 cases per 100,000. In the province where the hospital under study is located, epidemiologic data for 2011 reported 7 cases per 100,000, and 2012 saw an increase over the previous 8 years with 11 confirmed outbreaks and an average incidence of 9 cases per 100,000 of the population.⁶

As far as nosocomial scabies is concerned, data in the literature are even more limited. A 2006 review identified 19 hospital epidemics in the period 1990 to 2003, including health structures in Europe and in the United States: average duration of the epidemic was 14.5 weeks (range, 4-52), involving an average of 18 patients (range, 3-32) and 39 HCWs (range, 6-278).³ These data are in line

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with those reported from more recent epidemics in Germany (2004), in Switzerland (2007), and in Canada (2010).^{7–9}

Reports of various cases of scabies in a large hospital in Northern Italy over a period of only 4 months (September–December 2012) led to the creation of an epidemiologic task force that included doctors working within the local health authority and hospital management. The aims were to clarify the chain of infection, develop a strategy to quickly identify new cases, and, therefore, to contain the ongoing epidemic and avoid others in the future. The study also aimed to identify the best approach to be used in an industrialized country to deal with this re-emerging disease. To do this, the methodologies used in the epidemiologic studies and in the management of this epidemic were analyzed and compared with other reports in literature. In particular, the efficiency of a strategy based on an extensive use of communication tools rather than on a mass prophylaxis approach was evaluated.

METHODS

The epidemiologic study and active surveillance

This epidemiologic study was carried out by the local health authority according to the 2012 directives of the Region of Lombardy. These directives follow the evidence currently available in European and Italian literature.^{6,10} In Italy, all cases of scabies must be reported. The report must be filed directly by the clinician who will archive the data using special software (MAINF; Institution Regione Lombardia, Milan, Italy) with an immediate update of the centralized regional infectious diseases database.

As far as active surveillance is concerned, the task force undertook the following steps: (1) contact tracing of patients admitted onto the same ward as a confirmed case and on immediately adjacent wards during the current and previous admissions to the hospital under study and to other health structures in the same province; (2) personal and telephone interviews with all family and household contacts of confirmed cases; (3) implementation of infection control measures for patients with itchy dermatitis; and (4) personal interviews with nurses involved in the care of patients with a diagnosis of scabies regarding the emergence of pruritic skin lesions.

The hospital

The study was carried out in a hospital with 600 beds for ordinary admissions and 55 beds in the Day Hospital and Day Surgery Unit. The hospital is of recent construction (built less than 3 years ago) and has approximately 26,000 admissions a year. It has 14 departments and 31 divisions. The hospital is a referral center for a province in Northern Italy with a population of 590,000 inhabitants.

Case definition

A confirmed case of “classic” scabies is defined as a patient or HCW affected by the itching or eczema that is characteristic of the disease and for whom a dermatologist has confirmed the diagnosis on the basis of clinical criteria, ie, presence of “burrows,” eggs, or mites. In general, transmission of the disease requires direct or prolonged contact, eg, sharing the same bed, wearing the same clothes, or during sexual intercourse.

Besides the classic form of scabies, the “Norwegian” or “scabies crustosa” variation has also been described. A confirmed case of scabies crustosa is defined as the presence of the parasite along with erythematous lesions and desquamation or extensive hyperkeratotic skin lesions with crusting and scaling in subjects with an

impaired immune system or undergoing immunosuppressive therapy. In classic scabies, the estimated number of mites per patient is 10 to 15 compared with the 2 million per patient in scabies crustosa. The numerous mites found in scabies crustosa facilitate transmission through the environment and explain why it is highly contagious. The crusts flake off and contaminate the environment for up to 3 days. The absence of the “burrows” typical of the classic form, and the polymorphic presentation of the disease can make diagnosis problematic. Usually, patients with unrecognized crusted scabies show nonspecific pruritic lesions, often attributed to senile pruritus or anxiety, and they therefore receive long-term corticosteroid applications.^{2,7}

A case of the “atypical” or “HCW’s” form of scabies is defined as the presence of the parasite with an irregular distribution of the lesions because of the repeated handwashing that is regularly carried out by hospital staff. Frequently lesions are on the abdomen, in the armpits, and in the folds of the groin, whereas no lesions are seen on the wrists or between the fingers.^{11,12}

A negative skin scraping from a person with typical scabies does not rule out scabies infestation. Therefore, a “suspected” case is defined as a person who presents signs and symptoms consistent with scabies who had direct contact with a confirmed case in the 2 months preceding their onset.

Contact definition

Close contacts to typical scabies cases are defined as persons who had prolonged “hands-on” contact (at least 10–15 minutes), handled infested clothing or bed linen, or slept in the same bed as the case during the exposure period. As far as HCWs are concerned, close contacts are defined as those who have directly assisted or cared for a patient with scabies.

All the patients and HCWs who were on the same ward during the hospitalization of a case of scabies are considered indirect (potential) contacts. Although having a low risk of developing the disease, they make the ideal target for an information campaign because they could have been exposed, contact could have gone undetected, and/or they could be exposed again (eg, HCWs).

Contacts to atypical (crusted) scabies also include persons who had substantial contact with the environment of someone with crusted scabies, including HCWs who worked (regularly or as part of a temporary transfer) in the same unit/area as the case during the exposure period. If the case was admitted to more than 1 unit before control measures were initiated, all the units involved were considered affected.

RESULTS

The outbreak involved 4 hospital divisions: 2 internal medicine wards (A and B), a surgery division, and Nuclear Medicine. The evolution of the outbreak over time is summarized in [Table 1](#).

Reconstruction of the chain of infection

The spread of the infestation is presented in [Figure 1](#). In September 2012, 3 cases of scabies were diagnosed. The index case is the husband of a hospital HCW on the Internal Medicine A ward. The man works as a chef in a local hotel where he had repeatedly slept on the same camp bed used by his workmates. His wife infected a second HCW working on the same ward, probably through their having shared one of the hospital sweatshirts that the nurses use as part of their work clothes. The clinical profile corresponded to atypical scabies. The 3 cases were successfully treated. All bed linen and clothes were sterilized and sanitized, and the affected HCWs were temporarily barred from the ward.

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