TINEA CORPORIS CAUSED BY MICROSPORUM CANIS:
REPORT OF A NOSOCOMIAL OUTBREAK

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In an unusual nosocomial outbreak, 13 staff and 11 patients in an acute and chronic health care facility were infected with the zoophilic dermatophyte, Microsporum canis. The dermatophyte was apparently introduced into the facility by a single infected patient. Likely modes of subsequent disease transmission include person-to-person contact, handling of contaminated laundry, and use of a shared razor. Infection control measures for managing such outbreaks are discussed.

INTRODUCTION

Nosocomial infections caused by bacteria, fungi, and viruses are well recognized (5). Most fungal outbreaks occur as a result of contaminated equipment, aerial contamination problems, and less frequently, personal contact (2, 11, 27, 30). Outbreaks due to dermatophytes are extremely rare (16, 24), and are generally not discussed in standard texts on nosocomial infection (5, 31).

The present communication documents the discovery and control of an outbreak of tinea corporis caused by the zoophilic dermatophyte Microsporum canis. This fungus infected 13 staff and 11 patients in an acute and chronic health care facility.

MATERIALS AND METHODS

All patients and staff suspected to be infected or exposed were interviewed and examined. Skin scrapings were obtained from suspicious cutaneous lesions. In addition, fungal growth media were inoculated with material from fomites and from the environmental surfaces on the ward. Recovered isolates of M. canis were identified utilizing standard techniques (3, 17). Characteristics of the organism were as described by Rebell and Taplin (28). Because some primary cultures did not produce macroconidia on Sabouraud's peptone-dextrose medium, all presumptive M. canis isolates were subcultured to bromocresol purple-casein dextrose agar (14) in order to stimulate macroconidium formation.

After positive identification, all isolates were compared with each other macro- and micromorphologically to insure that they were sufficiently similar that they could be postulated to represent the same infectious strain.

RESULTS

Description of the outbreak. - The Strathroy Middlesex General Hospital is a primary care facility serving a rural farming community in Southern Ontario. There are 79 acute and 31 chronic care beds. The medical ward in the acute care wing has 34 of the 79 beds.
In November, an elderly farmer was admitted to the medical ward for the management of a cerebrovascular accident (CVA). In addition, a scaly erythematous rash was present on his chin, arms and legs. When scrapings from the border of the rash were examined with NaOH mounts, hyaline hyphae were observed. Subsequently, a zoophilic dermatophyte, \textit{M. canis} was isolated. The lesions were initially treated with vioform hydrocortisone, but once cultures confirmed the presence of a dermatophyte, therapy was changed to tolnaftate. Subsequently, the lesions cleared rapidly.

This index patient with the CVA necessitated frequent, prolonged, close contact (feeding, bathing, shaving and turning) between himself and his nurse.

In early January, the same nurse on the medical ward developed a scaly erythematous rash on his arms. Cultures of the infected sites confirmed the presence of \textit{M. canis}. Also, in early January, the index patient who had not as yet been diagnosed or treated was transferred to the chronic care unit. By the end of January, a second patient on the chronic care unit was infected. Subsequent infections in patients and staff, developed within the chronic care unit. By the end of February, six more nurses had developed infections on their arms, and six more patients were infected (Fig. 1).

The outbreak continued through March with new infections appearing in two nurses and two patients. In April, two nurses, a patient, a linen handler, and a ward clerk were newly infected (Fig. 1). At this point, institution of infection control measures was successful in eradicating the outbreak.

Table 1 summarizes the epidemiological and clinical data on the infected staff. Thirteen of 25 staff were infected with eleven being nurses (one was a clerk and one was a linen handler). Eleven of the 13 staff were females. The mean age was 38.3 years, with a range of 28 to 52 years. All eleven nurses who were infected had lesions on their arms (Fig. 2) correlating with their duties in moving and physically helping patients (Fig. 3). The linen handler, predictably, had lesions on his hands and arms.

\begin{table}
\centering
\caption{Epidemiological and clinical data on the outbreak of Microsporum canis infections among staff members.}
\begin{tabular}{l|l|l}
\hline
\textbf{Age/Sex} & \textbf{Infected Site} \\
\hline
1) & 52/M Arm (R) & \\
2) & 31/F Arm (R) & \\
3) & 33/F Arm (R. + L.) & \\
4) & 33/F Arm (R) & \\
5) & 28/F Arm (R) & \\
6) & 38/F Arm (L), Face, neck. & \\
7) & 35/F Leg (L) & \\
8) & 52/F Arm (L) & \\
9) & 43/F Arm (R) & \\
10) & 39/F Arm (R) & \\
11) & 43/M Arm (R) & \\
12) & 28/F Arm (R) & \\
13) & 43/F Arm (R) & \\
\hline
\end{tabular}
\end{table}

* R - Right  
L - Left

Table 2 summarizes the epidemiologic and clinical data on the infected patients. Eleven of 31 patients on the chronic care unit were infected. Eight of the 11 patients were male. The mean age was 79 years, with a range of 54 to 99 years. Six of the eight male patients and one of the three female patients shared the same electric shaver. Three patients were fully ambulatory, two were partially ambulatory (in wheelchairs), and six were bedridden.

Environmental investigation. - Extensive environmental sampling of the chronic care unit was performed to determine the source of infection and possible sites of contamination. Locations that were sampled, cultured, and proven negative for the isolation of \textit{M. canis} included: beds, night tables, laundry rooms, dirty utility room, floors, counter tops, bannister railings, windows, doorknobs and showers. Four electric razors were on the unit, but only two were used.