Scabies among Elderly Korean Patients with Histories of Leprosy

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Abstract. A scabies epidemic, traced by the hospital-based surveillance system, was reported in a Korean leprosarium. A total of 200 symptomatic cases were found during 2012–2014 among 570 elderly former leprosy patients. Most of cases were classic type scabies (87%) and aged 75 years and older (72%). Surveillance system for early diagnosis and prompt intervention was applied and the scabies epidemic was controlled effectively in this long-term care facility.

Scabies, an ectoparasite infestation caused by the mite *Sarcoptes scabiei* var. *hominis*, is an important cause of morbidity in the elderly but is an underrecognized tropical disease on a global scale.¹ Its incidence has recently increased,² making it the ninth most burdensome disease among the 15 highly prevalent skin diseases in the world.³ Scabies outbreaks frequently occur in elderly patients in care facilities, such as long-term care hospitals⁴ and nursing homes,⁵ as well as in resource-poor communities,⁶ and the homeless.⁷ Its increasing incidence might be related to escalations in the number of elderly care facilities, tolerance to medicine, and delayed diagnosis due to medical staff with limited practical experience with scabies. This disease tends to occur sporadically over a long period, causing nocturnal itching, which might decrease the patient's quality of life. However, it has largely been neglected as an important public health problem.^{8,9} Herein, we describe an outbreak of scabies among elderly patients previously treated for leprosy, and discuss the impacts of hospital-based surveillance programs on controlling outbreaks in a leprosarium. Leprosy is a chronic dermatological and neurological disease caused by *Mycobacterium leprae*. In the 1980s, the incidence of leprosy drastically declined in South Korea; currently, fewer than 10 patients are newly diagnosed with this disease each year.¹⁰

Sorokdo National Hospital (SNH) is the only inpatient hospital in Korea that provides treatment and care to patients with leprosy or those who have recovered from this disease. At the time this manuscript was written, 570 elderly former leprosy patients were hospitalized or lived in affected villages. This facility has a very high likelihood of scabies outbreaks because the average age of the residents is approximately 73 years, and 40.4% have World Health Organization grade II disabilities.¹¹ Figure 1 shows the trend of the weekly number of scabies cases. The number of patients with scabies began to gradually increase in early 2012, and the peak incidence involved 17 new patients with scabies during the week of July 30, 2012. A scabies-specific surveillance system was launched in August 2012. Weekly reports were distributed to all of the medical staff members, health care workers, and related administrative supporting sectors. After its launch, 200 cases of scabies were reported among the 570 patients who had recovered from leprosy at the end of 2014. All of

the cases of scabies were confirmed by a trained dermatologist based upon the customary skin lesions or microscopic findings using mineral oil. Topical agents, crotamiton and lindane, were used in the treatment of scabies. Table 1 shows the basic distributions of scabies cases according to age, sex, and leprosy classifications. Of the 200 patients, 53.5% were men, 72.0% were aged ≥ 75 years, and 49.0% developed reinfection. The reinfection rate among patients ≥ 75 years of age was 58.3%, which was higher than that among other age groups. The majority of cases involved classic scabies (87.0%), whereas cases of nodular or crusted scabies were rare. In addition, 66.0% of patients had lepromatous leprosy and 20.5% had tuberculoid leprosy (Table 1). Adults or eggs were found in 57.5% of patients who underwent the mineral oil test. (This study was approved by the Institutional Review Board of the SNH.)

The average number of scabies cases reported from 2012 to 2013 was 2.6 cases per week; this number declined to 1.4 cases per week in 2014. Since the second week of 2014, the number of scabies cases per week has not exceeded the alert level (8.2 cases per week), which was defined as two standard deviations above the mean weekly number of cases during the last 2 years. Since the 36th week of 2014, reports of new scabies cases have been rare; only three new cases were reported at the end of 2014 (Figure 1).

Crusted or Norwegian scabies is associated with immunosuppressive risk factors,¹² including human T-cell lymphotropic virus type 1¹³ and lepromatous leprosy.¹⁴ Most patients in this study might have had immunosuppressive risk factors because of their old age and history of leprosy treatment.

FIGURE 1. Number of scabies cases per week among the Korean elderly ex-leprosy patients in a leprosarium, 2012–2014 (dotted line represents the scabies epidemic alert line).

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TABLE 1

The distributions of scabies cases by age group in a leprosarium, 2012–2014

	Age (years)			Total
	< 65	65–74	≥ 75	
	N (%)	N (%)	N (%)	
Sex				
Male	12 (11.2)	31 (29.0)	64 (59.8)	107 (53.5)
Female	3 (3.2)	10 (10.8)	80 (86.0)	93 (46.5)
WHO classification				
MB	12 (7.5)	31 (19.5)	116 (80.6)	159 (79.5)
PB	3 (7.3)	10 (24.4)	28 (68.3)	41 (20.5)
Ridley-Jopling classification				
TT	2 (4.9)	11 (26.8)	28 (68.3)	41 (20.5)
BB	5 (7.5)	3 (12.0)	17 (68.0)	25 (12.5)
LL	7 (5.3)	26 (19.7)	99 (75.0)	132 (66.0)
I	1 (50.0)	1 (50.0)	–	2 (1.0)

BB = borderline leprosy; I = intermediate leprosy; LL = lepromatous leprosy; MB = multibacillary; PB = paucibacillary; TT = tuberculoid leprosy; WHO = World Health Organization.

However, most of the cases of scabies were of the classic type (87.0%); the crusted or Norwegian type (2.0%) was rarely observed (data not shown). This finding suggests that the scabies epidemic among the former leprosy patients of the SNH was caused by various conventional risk factors of scabies, such as aging, close contact, and poor hygiene, rather than those of an immunocompromised condition. Nevertheless, the classic type of scabies has better clinical course and is less contagious than the Norwegian type; it also tends to occur sporadically or over a long period, causing nocturnal itch, anxiety caused by possible outbreak, and concerns with reinfection, which ultimately lower the quality of life. Diagnosis of scabies was difficult because most patients had already developed a worsened skin condition caused by several chronic or geriatric diseases. This often resulted in poor compliance in the initial stages, which triggered prolonged transmission and delayed detection of the outbreak. Therefore, the specialized scabies surveillance system made it possible to provide timely feedback to medical staff members as well as cohabitants and neighbors of patients with scabies. Active control strategies, such as close observation of hospitalized patients, early application of confirmative diagnostic testing to patients with suspected dermatologic symptoms, environmental intervention, and health education, were applied during the surveillance period to interrupt the prolonged exposure to scabies cases.

In conclusion, classic scabies was by far the most frequently observed type of scabies among former leprosy patients and the surveillance system is assumed to contribute to controlling the scabies epidemic and preventing its further spread. The main reasons of the scabies epidemic seem to be closed environments and elderly subjects of the facility rather than those with leprosy histories. Actions to control scabies, especially in long-term care facilities such as leprosariums and nursing homes, should be taken to prevent health consequences due to the endemicity of scabies.

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