

Elevated Distribution of Dermatitis and Pressure Ulcer in Inpatient Patients with Schizophrenia and other Mental Disorders in Japan

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Received October 24, 2016; Accepted November 7, 2016; Published November 25, 2016

ABSTRACT

Background: Distribution of dermatological diseases in inpatient patients with mental disorders has been seldom studied.

Purpose: To study the distribution of dermatological diseases in inpatient patients with mental disorders.

Materials and Methods One hundred and sixty nine patients with dermatologic diseases (male: female = 90: 79, age 23-101 years-old, mean 66.4 years-old) in mental inpatient clinics were studied. The distributions were compared with the prevalence of dermatological diseases in Japan.

Results: The distributions of miscellaneous eczema in schizophrenia (41.0%), dementia (27.8%), geriatric psychiatric disease (53.8%) and organic mental disorder (83.3%) were significantly elevated compared with those without dermatological disease patients (4.3%, 0%, 0%, 0%) ($P<0.01$, $P<0.05$, $P<0.05$, $P<0.05$), respectively. The distributions of pressure ulcer in schizophrenia (12.8%), dementia (33.3%) and geriatric psychiatric disease (38.5%) were significantly elevated compared with those without dermatological disease patients ($P<0.05$, $P<0.05$, $P<0.05$), respectively. In addition, the distributions of pressure ulcer in dementia (33.3%) and geriatric psychiatric disease (38.5%) were significantly elevated compared with those with schizophrenia (12.8%) ($P<0.05$, $P<0.05$), respectively.

Conclusion: Increased distribution of dermatitis and pressure ulcer in schizophrenia and other mental disorders was found. These dermatological diseases should be kept in mind in medical practice in inpatient patients with mental disorders..

Keywords: Dermatological disease, Mental disorder, Dermatitis, Pressure ulcer.

INTRODUCTION

Psychodermatology includes primary dermatological diseases associated with psychosocial comorbidities and primary psychiatric disease presenting to dermatologists such as delusional infestation, body dystrophic disorder and dermatitis artifacts [1]. It is clear that patients with primary psychiatric disease presenting to dermatologists are fairly common, and that patients with chronic skin disease who experience psychosocial comorbidities are extremely common. The provision of care for such patients is sporadic across the UK and Europe, and probably globally. Dermatological disease is ubiquitous and can affect patients' live in various ways. Dermatological diseases can have a major impact on patients' lives in terms of psychological well-being, social functioning and everyday activities [2]. Dermatological diseases are considered to be often distributed also in patients with mental disorders. These distributions can affect not only on social functioning and

everyday activities, but also on psychological well-being in these patients. However, these distribution and its effect on psychological well-being have seldom studied. The present study was undertaken to know the distribution of dermatological diseases both in inpatient clinic patients with mental disorders.

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Citation: Ohtsuka T, Sato H, Mikuni M. (2016) Elevated Distribution of Dermatitis and Pressure Ulcer in Inpatient Patients with Schizophrenia and other Mental Disorders in Japan. *Dermatol Clin Res*, 2(3): 105-111.

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MATERIALS AND METHODS

Methods

From 2013 January to December, patients with mental disorders in inpatient clinics were consulted to Dermatology clinic for their dermatological diseases. Clinical dermatological diagnoses were made by their history, subjective complaints and cutaneous eruptions, and the patients were treated for their dermatological diseases. All the clinical dermatological diagnoses were made with the existence of specific cutaneous eruptions. Patients suspicious for other diseases in each dermatological disease were excluded. All the patients were Japanese. All of this information was described and analyzed statistically. Age, sex, diagnoses of mental disorders, cutaneous eruptions, disease duration, treatment for the dermatological diseases, laboratory findings, and changes of eruptions after treatment were described every week in each patient. Specialists for mental disorders excluded patients not suitable for examination in dermatology clinic. Ethical committee in International University of Health and Welfare Hospital approved this study.

The dermatological diseases were categorized as dermatitis, cutaneous infectious diseases, cutaneous tumors, cutaneous inflammatory diseases and exogenous cutaneous diseases. Cutaneous infectious diseases were composed of bacterial, viral, fungal and insect infections on the skin. Cutaneous inflammatory diseases were composed of inflammatory diseases not contained in dermatitis and/or cutaneous infectious diseases. Exogenous cutaneous diseases were composed of cutaneous diseases derived from exogenous artificial causes. The distributions of these disease category in patients with mental diseases were analyzed comparing with the prevalence of dermatological disorders in Japan [3].

The study revealed the distribution of skin diseases among dermatology patients in Japan, a nationwide, cross-sectional, seasonal, multicenter study conducted in 69 university hospitals, 45 district-based pivotal hospitals, and 56 private clinics (170 clinics in total). In each clinic, information was collected on the diagnosis, age, and gender of all outpatients and inpatients that visited the clinic on any one day of the second week in each of May, August, and November 2007 and February 2008. Miscellaneous eczema was composed of dermatitis not included in atopic dermatitis, hand eczema, contact dermatitis and seborrheic dermatitis. Miscellaneous bacterial infection was composed of cutaneous bacterial infection not included in acne, impetigo contagiosum, folliculitis, erysipelas and cellulitis. Miscellaneous nail disorders were composed of nail disorder not included in ingrown nail and tinea unguis.

Subjects

The psychiatric hospital studied in this study had 282 beds. Hospital wards were composed of 2 psychiatric general wards, 2 psychiatric sanatorium and 1 ward for dementia. The hospital also had psychiatric outpatient clinic and psychiatric daycare group home. The psychiatric hospital was composed of 9 psychiatric medical specialists. One hundred and sixty nine patients with dermatologic diseases in inpatient clinics were as follows; male: female = 90: 79, age 23-101 years-old, mean 66.4 years-old (**Table 1**). The patients with mental disorders were composed of 117 schizophrenia (69.1%), 18 dementia including Alzheimer disease (10.7%), 13 geriatric mental disorder (7.7%), 7 depression (4.1%), 6 organic psychotic disease (3.6%), 5 epilepsy (3.0%), 2 psychogenic reaction (1.2%) and one psychosomatic disease (0.6%). More than 2 psychiatric medical specialists made these diagnoses in these patients.

Table 1. The distribution of mental disorders in patients with inpatient mental clinic

Psychiatric diseases	Number	Percentage
Schizophrenia	117	69.1 %
Dementia		
(including Alzheimer disease)	18	10.7 %
Geriatric psychiatric disease	13	7.7 %
Depression	7	4.1 %
Organic mental disorder	6	3.6 %
Epilepsy	5	3.0 %
Psychogenic reaction	2	1.2 %
Psychosomatic disease	1	0.6 %
Total	169	100 %

Statistical analysis

Chi-square test with Yates' correction was used to evaluate the difference of occurrence rate between 2 groups.

RESULTS

The distribution of dermatological diseases in patients with inpatient mental disorders

The distributions of dermatological diseases in inpatient clinic were studied (**Table 2**). Of eczema / dermatitis, the distribution of miscellaneous eczema (41.4%) in patients with mental disorders showed elevated tendency compared with those in general clinic patients (18.7%). The distribution of contact dermatitis and seborrheic dermatitis in patients with mental disorders showed no difference with those in general clinic patients, respectively. Of cutaneous infectious diseases, the distribution of tinea pedis/ unguis, acne, cellulitis, skin candidiasis, herpes zoster and scabies in patients with mental disorders showed no differences compared with those in with general clinic patients,

respectively. Of cutaneous tumors, the distribution of tyrosinosis, epidermal cyst, seborrheic dermatitis, pigmented nevus and lipoma in patients with mental disorders showed no difference compared with those in general clinic patients, respectively. Of cutaneous inflammatory diseases, the distribution of psoriasis (0.6%) in patients with mental disorders showed decreased tendency compared with those in general clinic patients (4.4%). The distribution of erythema nodosum, idiopathic pigmentary purpura and drug eruption in patients with mental disorders showed no difference with those in general clinic patients, respectively. Of exogenous dermatological diseases, the distribution of pressure ulcer (16.0%) and miscellaneous nail disorder (4.1%) in patients with mental disorders showed increased tendency compared with those in general clinic patients (0.9%; 0.59%), respectively. The distribution of burn, ingrown nail and trauma in patients with mental disorders showed no difference compared with those in general clinic patients, respectively.

Table 2. The distribution of dermatological diseases in patients with inpatient mental clinic

Category	Number	Percentage
Eczema/Dermatitis		
Miscellaneous eczema	70	41.4%
Contact dermatitis	4	2.4%
Seborrheic dermatitis	4	2.4%
Cutaneous infectious diseases		
Tinea pedis/unguis	15	8.9%
Acne	6	3.6%
Cellulitis	4	2.4%
Skin candidiasis	2	1.2%
Herpes zoster	1	0.6%
Scabies	1	0.6%
Cutaneous tumors		
Tyrosinosis	5	3.0%
Epidermal cyst	3	1.8%
Seborrheic keratosis	2	1.2%
Pigmented nevus	1	0.6%
Lipoma	1	0.6%
Cutaneous inflammatory diseases		
Psoriasis	1	0.6%
Erythema nodosum	1	0.6%
Idiopathic pigmentary purpura	1	0.6%
Drug eruption	1	0.6%
Exogenous cutaneous diseases		
Pressure ulcer	27	16.0%
Miscellaneous nail disorder	7	4.1%
Burn	5	3.0%
Ingrown nail	2	1.2%
Trauma	1	0.6%
No dermatological disease	5	3.0%
Total	169	100%

The distribution of dermatological diseases in each mental disorder

The distributions of dermatological diseases in each mental disorder were studied (**Table 3**). Of dermatitis, the distributions of miscellaneous eczema in patients with schizophrenia (41.0%) and geriatric psychiatric disease (53.8%) showed elevated tendency compared with those in general clinic patients (18.7%). Other distributions in other patients showed no differences compared with those in general clinic patients. Of cutaneous infectious diseases, the distributions of tinea pedis/unguim, acne, cellulitis, skin candidiasis, herpes zoster and scabies in each mental disorder showed no differences compared with those in with general clinic patients, respectively. Of cutaneous tumors, the distribution of tyrosinosis, epidermal cyst, seborrheic dermatitis, pigmented nevus and lipoma in each mental disorder showed no difference compared with those in

general clinic patients, respectively. Of cutaneous inflammatory diseases, the distributions of psoriasis, erythema nodosum, idiopathic pigmentary purpura and drug eruption in each mental disorder showed no differences compared with those in general clinic patients, respectively. Of exogenous dermatological diseases, the distributions of pressure ulcer in patients with schizophrenia (12.8%), dementia (33.3%) and geriatric psychiatric disease (38.5%) showed elevated tendency compared with those in general clinic patients (0.90%), respectively. The distribution of miscellaneous nail disorder in patients with schizophrenia (3.4%) and geriatric psychiatric disease (7.7%) showed increased tendency compared with those in general dermatological clinic patients (0.56%). Other distributions in other patients showed no differences compared with those in general clinic patients.

Table 3. The distribution of dermatological diseases inpatient patients with each mental disorder

Category	Schizophrenia (n=117)	Dementia (n=18)	Geriatric psychiatric disease (n=13)	Depression (n=7)	Organic mental disorder (n=6)	Epilepsy (n=5)
Dermatitis						
Miscellaneous eczema	48(41.0%)*	5(27.8%)*	7(53.8%)*	3(42.9%)	5(83.3%)*	2(40.0%)
Contact dermatitis	2(1.7%)	1(5.5%)	0	0	0	1(20.0%)
Seborrheic dermatitis	3(2.6%)	0	0	1(14.3%)	0	0
Cutaneous infectious diseases						
Tinea pedis/unguim	11(9.4%)	2(11.1%)	0	0	0	1(20.0%)
Acne	6(6.1%)	0	0	0	0	0
Cellulitis	3(2.6%)	1(5.5%)	0	0	0	0
Skin candidiasis	2(1.7%)	0	0	0	0	0
Herpes zoster	1(0.9%)	0	0	0	0	0
Scabies	0	0	0	1(14.3%)	0	0
Cutaneous tumors						
Tyrosinosis	4(3.4%)	0	0	1(14.3%)	0	0
Epidermal cyst	2(1.7%)	0	0	0	0	1(20.0%)
Seborrheic keratosis	1(0.9%)	1(5.5%)	0	0	0	0
Pigmented nevus	0	1(5.5%)	0	0	0	0
Lipoma	1(0.9%)	0	0	0	0	0

Cutaneous inflammatory diseases						
Psoriasis	1(0.9%)	0	0	0	0	0
Erythema nodosum	1(0.9%)	0	0	0	0	0
Idiopathic						
pigmentarypurpura	1(0.9%)	0	0	0	0	0
Drug eruption	1(0.9%)	0	0	0	0	0
Exogenous cutaneous diseases						
Pressure ulcer	15(12.8%)*	6(33.3%)*#	5(38.5%)*#	0	0	0
Miscellaneous nail disorder	4(3.4%)	1(5.5%)	1(7.7%)	1(14.3%)	0	0
Burn	4(3.4%)	0	0	0	1(16.7%)	0
Ingrown nail	2(1.7%)	0	0	0	0	0
Trauma	0	0	0	0	0	0
No dermatological disease						
	5(4.3%)	0	0	0	0	0

*; $P < 0.05$ vs. no dermatological disease patients in each mental disorders (χ^2 -test), **; $P < 0.01$ vs. no dermatological disease patients in each mental disorders (χ^2 -test)*; $P < 0.05$ vs. patients with schizophrenia (χ^2 -test).

The distributions of dermatological diseases comparing with no dermatological disease patients in each mental disorder were studied. The distributions of miscellaneous eczema in patients with schizophrenia (41.0%), dementia (27.8%), geriatric psychiatric disease (53.8%) and organic mental disorder (83.3%) were significantly elevated compared with those without dermatological disease patients (4.3%, 0%, 0%, 0%) ($P < 0.01$, $P < 0.05$, $P < 0.05$, $P < 0.05$), respectively. The distributions of pressure ulcer in patients with schizophrenia (12.8%), dementia (33.3%) and geriatric psychiatric disease (38.5%) were significantly elevated compared with those without dermatological disease patients (4.3%, 0%, 0%, 0%) ($P < 0.05$, $P < 0.05$, $P < 0.05$), respectively. In addition, the distributions of pressure ulcer in patients with dementia (33.3%) and geriatric psychiatric disease (38.5%) were significantly elevated compared with those with schizophrenia (12.8%) ($P < 0.05$, $P < 0.05$), respectively. Two patients with psychogenic reaction presented with tinea pedis and pressure ulcer. A patient with psychosomatic disease presented with trauma. These 3 patients in 2 kinds of mental disorders were not statistically analyzed, because of small numbers of patients.

DISCUSSION

The present study showed elevated distribution of miscellaneous eczema, pressure ulcer and miscellaneous nail disorders in patients with schizophrenia and other mental disorders. Increased distribution of dermatitis indicated that

dermatological most common disease may be overlooked in general practice of mental disorders. A study showed that exanthematous eruptions, urticaria, photosensitivity, pigmentary problems, acne, alopecia, fixed drug eruptions, and lichenoid reactions are the most common dermatologic side effects associated with the administration of psychopharmacologic agents [4]. The study may represented elevated prevalence of dermatitis with pruritic symptoms. A study showed that emollient improved the course of dermatitis including atopic dermatitis and can improved the Quality of Life (QoL) of patients and their families [5]. A trial revealed the efficacy of the product in improving parent QoL, with 80% favorable opinions in parents' declarative judgments and dermatologists' assessments. Disease activity correlated better with QoL when disease activity was less severe and disease extent correlated better with QoL than disease severity [6].

A study indicated high comorbidity, with 20.2% of schizophrenia patients experiencing concurrent atopic disorders (AD) [7]. Another study indicated the existence of an association between atopic disorders in general and asthma in particular and the risk of developing schizophrenia [8]. The study added to a growing body of literature suggesting the possible involvement of immune processes in the pathophysiology of schizophrenia. A population-based study of atopic disorders showed that childhood atopic disorders increase the risk of psychotic experiences in

adolescence [9]. It is known that itch is associated with psychological variables. In patients with AD, depression was a significant predictor of self-rated induced itch; while agreeableness and public self-consciousness were significant predictors of induced scratching [10]. These results implied that a special group of patients with AD might benefit from certain psychological interventions. A study sought to determine the role of atopic disorders in depression using data from a randomly-selected, population-based study of men and women [11]. A study performed a cross-sectional, questionnaire-based study to explore the relationship of suicidal ideation, mental health problems, and social functioning with eczema [12]. Among those with current eczema, 15.5% reported suicidal ideation compared with 9.1% among those without eczema, significantly associated in a multivariate model. A study determined the prevalence of injuries requiring medical treatment in US children with allergic disease [13]. The results suggested that the association between allergic disease and injury is multifactorial, including being secondary to psychiatric and behavioral disorder. Accordingly, mental disorders and dermatitis may have close relationship, and intervention by dermatologist is mandatory.

Pressure ulcer showed elevated distribution in patients with schizophrenia, dementia and geriatric psychiatric disease. Pressure ulcers are the result of unrelieved pressure, usually over a bony prominence [14]. A comprehensive team approach can address both prevention and treatment of these recalcitrant wounds. The presence of increasing pain may make infection of a chronic wound more likely [15]. The increased distribution of pressure ulcer in dementia patients in the present study showed that they have lower ability to complain symptoms including pain. Geriatric dermatoses including pressure ulcer are a challenging job for the physician in terms of diagnosis, management, and follow up [16]. A retrospective medical records review of all long-term care (LTC) residents referred to a wound consultative service was conducted to assess predictors of 6-month healing outcome [17]. A higher number of chronic ulcers and lower hemoglobin counts increased the risk of no healing after 6 months of care. The presence of a pressure ulcer constitutes a geriatric syndrome consisting of multifactorial pathological conditions [18]. The accumulated effects of impairment due to immobility, nutritional deficiency and chronic diseases involving multiple systems predispose the aging skin of the elderly person to increasing vulnerability. Compared with less severely demented residents, residents with severe dementia showed more decline on measures where they still had room for change in 2 prospective cohort studies [19]. A study showed that persons with schizophrenia were more likely to experience the most common types of medical injuries [20]. Improved understanding of factors related to hospital quality of care and outcomes in this group will be important to plan

interventions to enhance patient safety for persons with schizophrenia other patients with mental disorders.

A meta-review was conducted to explore the risks of all-cause and suicide mortality in major mental disorders [21]. All mental disorders had an increased risk of all-cause mortality compared with the general population. These higher mortality risks translate into substantial (10-20 years) reductions in life expectancy. The excess risks of mortality and suicide in all mental disorders justify a higher priority for the research, prevention, and treatment of the determinants of premature death in psychiatric patients. Intervention for dermatological diseases may prevent substantial reductions in life expectancy and improve QoL.

REFERENCES

1. Bewley A, Affleck A, Bundy C, Higgins E, Higgins E, et al. (2013) Psychodermatology services guidance: the report of the British Association of Dermatologists' Psychodermatology Working Party. *Br J Dermatol* 168: 1149-1150.
2. Finlay AY, Ryan TJ (1996) Disability and handicap in dermatology. *Int J Dermatol* 35: 305-311.
3. Furue M, Yamazaki S, Jimbow K, Tsuchida T, Amagai M, et al. (2011) Prevalence of dermatological disorders in Japan: a nationwide, cross-sectional, seasonal, multicenter, hospital-based study. *J Dermatol* 38: 310-320.
4. Garnis-Jones S (1996) Dermatologic side effects of psychopharmacologic agents. *Dermatol Clin* 14: 503-508.
5. Gelmetti C, Boralevi F, Seit   S, Grimalt R, Humbert P, et al. (2012) Quality of life of parents living with a child suffering from atopic dermatitis before and after a 3-month treatment with an emollient. *Pediatr Dermatol* 29: 714-718.
6. Haeck IM, ten Berge O, van Velsen SG, de Bruin-Weller MS, Bruijnzeel-Koomen CA, et al. (2012) Moderate correlation between quality of life and disease activity in adult patients with atopic dermatitis. *J Eur Acad Dermatol Venereol* 26: 236-241.
7. Chen YH, Lee HC, Lin HC (2009) Prevalence and risk of atopic disorders among schizophrenia patients: a nationwide population based study. *Schizophr Res* 108: 191-196.
8. Pedersen MS, Benros ME, Agerbo E, B  rghlum AD, Mortensen PB, et al. (2012) Schizophrenia in patients with atopic disorders with particular emphasis on asthma: a Danish population-based study. *Schizophr Res* 138: 58-62.
9. Khandaker GM, Zammit S, Lewis G, Jones PB (2014) A population-based study of atopic disorders and inflammatory markers in childhood before psychotic experiences in adolescence. *Schizophr Res* 152: 139-145.

10. Schut C, Bosbach S, Gieler U, Kupfer J (2014) Personality traits, depression and itch in patients with atopic dermatitis in an experimental setting: a regression analysis. *Acta Derm Venereol* 94: 20-25.
11. Sanna L, Stuart AL, Pasco JA, Jacka FN, Berk M, et al. (2014) Atopic disorders and depression: findings from a large, population-based study. *J Affect Disord* 155: 261-265.
12. Halvorsen JA, Lien L, Dalgard F, Bjertness E, Stern RS (2014) Suicidal ideation, mental health problems, and social function in adolescents with eczema: a population-based study. *J Invest Dermatol* 134: 1847-1854.
13. Garg N, Silverberg JI (2014) Association between childhood allergic disease, psychological comorbidity, and injury requiring medical attention. *Ann Allergy Asthma Immunol* 112: 525-532.
14. Cushing CA1, Phillips LG (2013) Evidence-based medicine: pressure sores. *Plast Reconstr Surg* 132: 1720-1732.
15. Reddy M, Gill SS, Wu W, Kalkar SR, Rochon PA (2012) Does this patient have an infection of a chronic wound? *JAMA* 307: 605-611.
16. Jafferany M, Huynh TV, Silverman MA, Zaidi Z (2012) Geriatric dermatoses: a clinical review of skin diseases in an aging population. *Int J Dermatol* 51: 509-522.
17. Takahashi PY, Kiemle LJ, Chandra A, Cha SS, Targonski PV (2009) A retrospective cohort study of factors that affect healing in long-term care residents with chronic wounds. *Ostomy Wound Manage* 55: 32-37.
18. Jaul E (2010) Assessment and management of pressure ulcers in the elderly: current strategies. *Drugs Aging* 27: 311-325.
19. van der Steen JT, Kruse RL, Mehr DR, Ribbe MW, van der Wal G (2007) Dementia severity, decline and improvement after a lower respiratory tract infection. *J Nutr Health Aging* 11: 502-506.
20. Khaykin E, Ford DE, Pronovost PJ, Dixon L, Daumit GL (2010) National estimates of adverse events during nonpsychiatric hospitalizations for persons with schizophrenia. *Gen Hosp Psychiatry* 32: 419-425.
21. Chesney E, Goodwin GM, Fazel S (2014) Risks of all-cause and suicide mortality in mental disorders: a meta-review. *World Psychiatry* 13: 153-160.