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Exacerbation of Atopic Dermatitis and Other Skin Diseases by Confinement in a Juvenile Classification Home

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Summary. **Objective: To clarify the influence of confinement on bronchial asthma (BA), atopic dermatitis (AD), and other skin diseases.**
Methods: Four hundred ninety-six youths (454 boys and 42 girls) who resided at the Niigata Juvenile Classification Home were evaluated.
Results: Seventy-seven boys (17.0%) and sixteen girls (38.1%) had some exacerbations. Exacerbation was observed not only in AD but also other skin diseases such as folliculitis, or folliculitis like eruption. Three boys seemed to have exacerbation of BA.
Conclusion: Confinement has an influence on skin diseases and possibly on BA in youths.

Key words—Juvenile classification home, confinement, bronchial asthma, atopic dermatitis, folliculitis or folliculitis like eruption.

INTRODUCTION

Pseudodementia by confinement is known as Ganser syndrome[1]. Since bronchial asthma (BA) and atopic dermatitis (AD) have factors of psychosomatic diseases[2-4], and there are some reports of such in juvenile delinquency[5,6], we investigated whether confinement worsened those diseases in a Juvenile Classification Home. We found exacerbations in some cases, not only for those two diseases but also for eczema, cheilitis, angular stomatitis, stomatitis, folliculitis or folliculitis like eruptions, which were induced or worsened by confinement.

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PATIENTS AND METHODS

The Niigata Juvenile Classification Home is a correctional institution where young persons who have committed acts of juvenile delinquency are confined after their arrest and detention. These youths are sent from the family court and reside there approximately four weeks. Inquiries of their medical history and a physical check up are done on their arrival by an internist. When they show symptoms, treatment is done by an internist and recorded. Sometimes they are referred to specialists. We analyzed the records from January 1, 1998 to December 31, 1999. The children stay in individual or group rooms (up to four in one room). The door is locked. There is no air conditioner, though the rooms are equipped with a heater and an electric fan. During their stay, juvenile classification home psychologists perform psychological investigations and evaluate their attitudes, and then make up a pre-trial classification report. The residents have a regular diet, bath, and exercise. They bathe three times a week from December to February and July to September, and twice a week during the rest of the year. There is daily exercise, with showers after exercise during the summer. After the evaluation, the family court decides whether or not to send them to a juvenile training school.

RESULTS

Four hundred ninety-six youths (454 boys and 42 girls, average age 17.4 years old, 14-19 years old) staying at the institute during the study period.

1) Bronchial asthma (BA)

Fifty-three out of the 454 boys (11.7%) had a history of BA. Among them, thirty-one boys reported that they had had an asthma attack within 1 year of admission. No girls had a history of BA. Eleven boys were taking drugs for BA (either xanthines or β stimulants) before admission, and the therapy was continued. Six boys had a BA attack during their stay. One fourteen-year-old boy had not experienced a BA attack since the age of eleven. Two other boys developed more frequent attacks after admission (six times per month from one time per month, and four times per month from almost no attacks). Therefore, exacerbation of BA was observed in three boys. One boy complained of dyspnea with paresthesia of the hands and tachypnea but it was thought to be a hyperventilation syndrome. He was treated by bag inhalation method and recovered.

2) Atopic dermatitis (AD)

Thirty-six youths (thirty-two boys and four girls) had a history of AD. Among them, twenty-two youths (eighteen boys and four girls) had AD and were treated. Eight boys were receiving treatment for AD before admission and the therapy was continued. Fourteen other youths (ten boys and four girls) had exacerbation of their AD which was confirmed by the inspection of the internist.

3) Eczema

Nineteen youths (fifteen boys and four girls) developed non-atopic eczema. Two boys were referred to a dermatologist since their eczema did not respond with the topical steroid therapy. Therefore, scabies or fungal infection was suspected. However, no scabies nor fungus was detected, and they responded to an oral anti-histamine drug and topical corticosteroid.

4) Cheilitis

Twenty-two boys (4.9%) and six girls (14.3%) complained of cheilitis.

5) Angular stomatitis

Ten boys (2.2%) and two girls (4.8%) complained of angular stomatitis.

6) Stomatitis

Four boys (0.9%) developed stomatitis.

7) Folliculitis, or folliculitis like eruption

Seventeen boys (3.7%) and one girl (2.4%) developed multiple folliculitis, or a folliculitis like eruption. Since they were not referred to dermatologist and no culture was taken, a differential diagnosis of these two diseases was difficult. One boy with folliculitis, or a folliculitis like eruption who was under a long term observation (six months) for the diagnosis of a psychiatric condition worsened in spite of a combination of gentamicin and a steroid ointment (betamethasone valerate). He was referred to a dermatologist. However, his exanthema persisted and worsened in three months, and the strongest corticosteroid (clobetasol propionate) was prescribed. His exanthema had almost disappeared within a week, and the clobetasol propionate was changed to betamethasone valerate again.

Table 1. Exacerbated symptoms

	Boys	Girls
1. Bronchial asthma	3/ 53(5.7%)	
2. Atopic dermatitis	10/ 32(31.3%)	4/ 4(100%)
3. Non-atopic eczema	15/454(3.3%)	4/42(9.5%)
4. Cheilitis	22/454(4.9%)	6/42(14.3%)
5. Angular stomatitis	10/454(2.2%)	2/42(4.8%)
6. Stomatitis	4/454(0.9%)	0/42(0%)
7. Folliculitis (or folliculitis like eruption)	17/454(3.7%)	1/42(2.4%)
8. Herpes zoster	1/454(0.2%)	0/42(0%)

8) Herpes zoster

One boy developed herpes zoster on his back.

The exacerbation of symptoms in the boys and girls are summarized in Table 1. There were eighty-two incidences among the boys and seventeen among the girls. Five boys and one girl had two different symptoms. In total, seventy-seven boys (17.0%) and sixteen girls (38.1%) experienced some exacerbation of their condition.

DISCUSSION

In psychiatry, pseudodementia by confinement is known as Ganser syndrome[1]. Our results indicate that confinement also exacerbated AD and other skin diseases, and possibly BA. A relationship between psychological state and immunological response has been reported[7-10]. Camara and colleagues reported that the central nervous system and immune system have a relationship with neuropeptides and cytokines. In 1976, it was reported by the U.S. National Aeronautics and Space Administration (NASA) that the number of white blood cells and the percentage of granulocytes increased with stress (when the astronauts entered into the atmosphere)[8]. Three days later, lymphoblastogenesis (PHA) was reduced. Moroda and colleagues also reported the hyperfunction of granulocytes arising from stress[9]. They restrained rats in a stainless steel mesh, which induced stress. The rats then developed gastric ulcers. The pre-elimination of granulocytes by anti-granulocytes mAb abrogated the formation of ulcers in rats, whereas the preactivation of granulocytes by G-CSF accelerated the formation[9]. Not only cellular immunity, but humoral immunity as well has been reported to be affected by stress. McClelland and colleagues reported that stress reduced the level of IgA in the saliva and induced upper respiratory infection[10]. Cohen and colleagues also reported that stress increased susceptibility to the common cold[11]. Thus, according to past reports, mental stress stimulates granulocyte function, and simultaneously suppresses humoral immunity.

It has been shown that BA and AD are exacerbated by confinement since these diseases are types of psychosomatic diseases[2-6]. It has been reported that AD develops in children with a poor relationship to their mother[2,3]. Psychological stress was also reported to worsen bronchial asthma[4]. Here we report that not only AD, other skin diseases such as folliculitis or folliculitis like eruption were induced or worsened. When plural youths developed folliculitis or a folliculitis like eruption with pruritus simultaneously, they were referred to a dermatologist in order to rule out scabies or fungal infection. We should pay attention to this in Japan since it is easily transmittable through Tatami mats (Japanese straw mats) and often causes mass infection in mental institutions or prisons[12]. However, there was no case of scabies in the institution.

The multiple folliculitis or folliculitis like eruption observed in the youths resembled skin lesions of Behcet's disease even though they did not develop any genital ulcer. Stomatitis was observed in four boys who did not have folliculitis or a folliculitis like eruption. Some youths complained of itching of the eyes. One had folliculitis or a folliculitis like eruption, but we could not determine whether he developed uveitis since he was not referred to a specialist.

Since the hyperfunction of granulocytes has been reported in cases of stress[8,9] and in Behcet's syndrome[13,14,15], it might be possible that the folliculitis like eruption in youths in the Juvenile classification home and in Behcet's syndrome was caused by a common mechanism.

We had to treat many cases of common cold or abdominal symptoms, but we did not choose to analyze them since most of the youths became hypochondriac and we could not judge whether those symptoms were real. Therefore, we here discuss BA and those skin diseases which we could definitively evaluate with inspection. However, it is possible that some respiratory infections, gastritis or gastric ulcer had really developed due to emotional stress.

The environment should be considered as a cause for exacerbation of a condition. Even though there are reports of the exacerbation of BA in juvenile delinquency, there is no report which examined the amount of house dust in juvenile classification home. Since ours is the first report on the exacerbation of skin diseases in a juvenile classification home, similar studies should be carried out in other institutions. Also, the degree of skin care in institutions should be considered since it is possible that poor skin care might induce the exacerbation of AD, eczema, folliculitis or a folliculitis like eruption. However, it is unlikely that the cheilitis, stomatitis, or angular stomatitis in this study were affected by poor skin care, which suggests the influence of emotional stress.

Our results show that confinement in a juvenile classification home induces or exacerbates many skin diseases. Further studies should be designed.

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