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Improvement of psychological disorders by spa therapy in patients with asthma

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Abstract : To evaluate improvement of mental disorders by spa therapy for 1 – 2 months, three kinds of psychological examinations, CMI (Cornel Medical Index), SDS (Selfrating Depression Scale) and CAI (Comprehensive Asthma Inventory) tests, were performed in 37 patients with asthma before and after spa therapy. 1. In CMI test, the scores of physical symptoms, respiratory symptoms, and CIJ symptoms significantly decreased after spa therapy. The score of psychical symptoms tended to decrease after the therapy, however, this was not significant. 2. The mean score of the subjects over 40 points in SDS test significantly decreased from 45.7 points before spa therapy to 37.5 after the therapy. 3. Mental disorders evaluated by various categories in CAI test were significantly improved after spa therapy. The average score in CAI test significantly decreased from 37.1 to 27.8 after the therapy.

These results demonstrate that psychological disorders in patients with asthma are improved by spa therapy.

Key words : Spa therapy, Bronchial asthma, CMI test, SDS test, CAI test

Introduction

Spa therapy has two kinds of actions in the treatment of asthma. One is observed as a direct action on airways, and another is found as an indirect action on the other organs except airways. Improvement of symptoms¹⁻³⁾ and ventilatory function^{4, 5)}, and suppression of bronchial hyperrespon-

siveness^{6,7)} are attained by the direct action of spa therapy. In contrast, improvement of suppressed function of adrenocortical glands is due to the indirect action of the therapy^{8,9)}.

In addition to these actions of spa therapy, improvement of psychological disorders by spa therapy has been anticipated in patients with asthma. It has been well known that the

environment around the place, where spa therapy is carried out, gives psychological relaxation to patients and healthy subjects. This is an indirect action of spa therapy, being expected to be beneficial to treatment of asthma. In fact, our previous studies have demonstrated that psychological disorders in patients with asthma are improved by spa therapy¹⁰.

In the present study, improvement of psychological disorders in patients with asthma by spa therapy was assessed by three kinds of psychological examinations.

Subjects and Methods

The subjects of this study were 37 patients (21 females and 16 males) with asthma. Their mean age was 58.0 years. All patients were admitted to our hospital, and had complex spa therapy¹¹ (swimming training in a hot spring pool¹², inhalation of iodine salt solution¹³ and fango therapy¹⁴) for 1 – 2 months. Three kinds of psychological examinations were performed before and after spa therapy, and the results before and after the therapy were compared to evaluate improvement of psychological disorders.

psychological examinations performed in this study were as follows :

1. CMI test (Coenel Medical Index):changes of physical symptoms, respiratory symptoms, CIJ symptoms (which represents various complaints coming from psychological disorders), and psychical symptoms were compared before and after spa therapy.

2. SDS test (Selfrating Depression Scale) : this test was performed to assess depressive mental state.

3. CAI test (Comprehensive Asthma Inventory) : this test was carried out to evaluate subjective symptoms due to psychological

disorders.

Results

1. CMI test

Figure 1 shows changes of various categories in CMI test before and after spa therapy. In physical symptoms, scores of respiratory system and cardiovascular system were high before spa therapy, and these categories showing a high score were markedly improved by the therapy. In psychical symptoms, scores of categories such as maladaptation and anger were high before spa therapy, and the score of maladaptation tended to decrease after the therapy (Fig. 1).

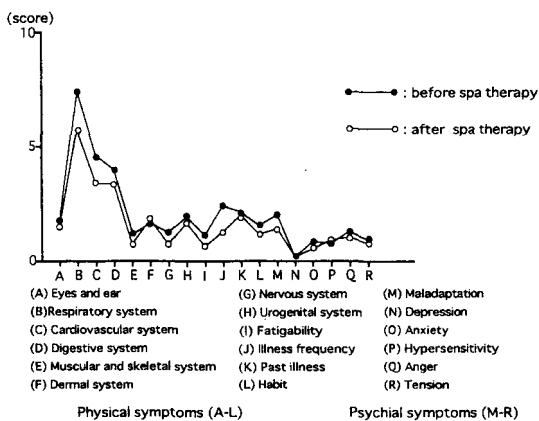


Fig. 1. Evaluation of spa therapy by CMI method in patients with bronchial asthma before and after the therapy.

Four categories, physical symptoms, respiratory symptoms, CIJ symptoms (which is total score of cardiovascular system, fatigability and illness frequency), and psychical symptoms, were compared before and after spa therapy. The score of physical symptoms significantly decreased from 31.2 points before spa therapy to 23.8 points after the therapy ($p < 0.01$). The symptoms were

improved in 29 of the 37 subjects (78.4%)
 The score also significantly decreased in
 respiratory symptoms (from 7.4 to 5.7, $p < 0.01$) and CIJ symptoms (from 8.1 to 5.3, $p < 0.01$). The improvement rate was 54.1% in respiratory symptoms and 65.9% in CIJ symptoms. The score of psychical symptoms tended to decrease after spa therapy, however, this was not significant (Fig. 2).

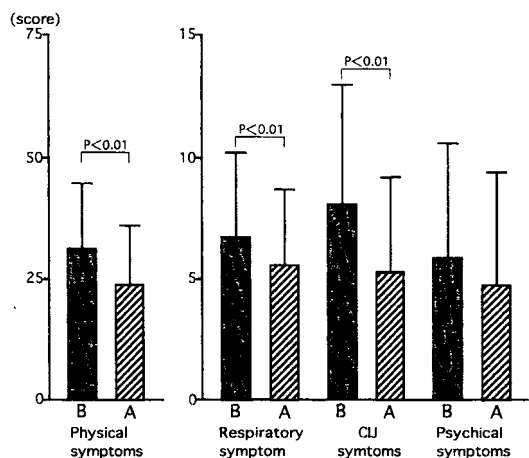


Fig. 2. Evaluation on spa therapy by four categories of a CMI method in patients with bronchial asthma before (B) and after (A) the therapy.

2. SDS test

Seventeen of the 37 patients (46.0%) showed a score over 40, which represents neurotic tendencies. The mean score of these subjects was 45.7 points before spa therapy. This score significantly decreased to 37.5 points ($p < 0.01$). Only 4 of them did not show any change, and marked improvement in score was observed in 4 subjects (Fig. 3).

3. CAI test

Categories of mental state such as extent of conditioning, suggestion, fear of expectation, frustration, flight into illness, distorted

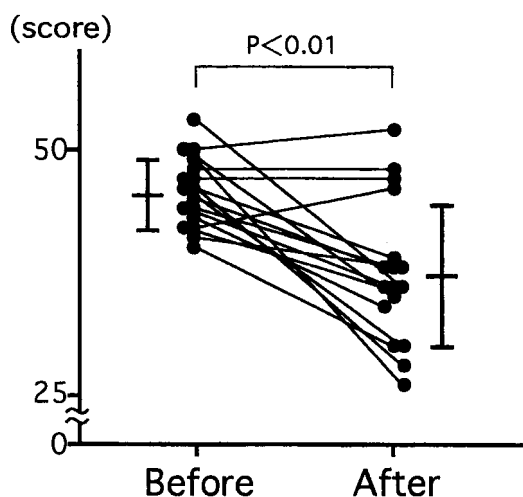


Fig. 3. Evaluation on spa therapy by a SDS method in asthma patients with SDS score of 40 or over before and after the therapy.

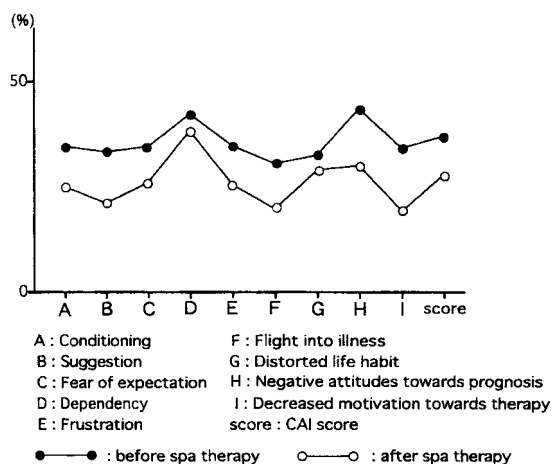


Fig. 4. Evaluation on spa therapy by a CAI method (CAI-gram curve) in patients (all of subjects in this study) with bronchial asthma before and after the therapy.

life habits, negative attitudes towards prognosis, and decreased motivation towards therapy, were clearly improved by spa therapy. A score, average of points in each

category, over 40 points was found in 15 of the 37 subjects (40.5%) before spa therapy and in 6 (16.2%) after the therapy (Fig. 4).

Changes in the score of each category were compared before and after spa therapy. The mean score in categories of extent of conditioning, suggestion, fear of expectation, dependency, and frustration significantly decreased after spa therapy (Fig. 5 -a). The mean score in categories of flight into illness, distorted life habits, negative attitudes towards prognosis, and decreased motivation towards therapy, were also significantly decreased after spa therapy. The mean of CAI score significantly decreased from 37.1 to 27.8 ($p < 0.01$) (Fig. 5 -b).

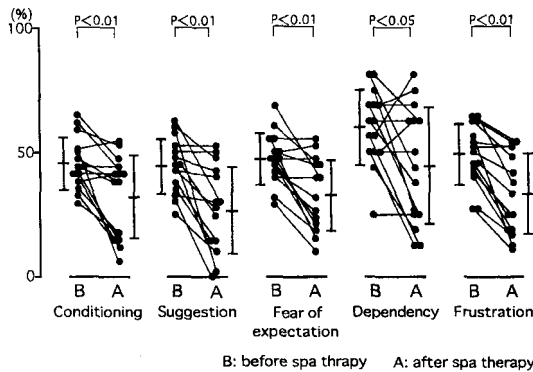


Fig. 5 -a. Evaluation on spa therapy by a CAI method in asthma patients with CAI score of 40 or over before and after the therapy.

Discussion

There are some patients with asthma whose attacks are closely related to changes of psychological conditions. Furthermore, many of asthma attacks are often affected by mental disorders, which is associated with tension of autonomic nerve system. The reason why asthma attacks are often occur from midnight to early morning is explained

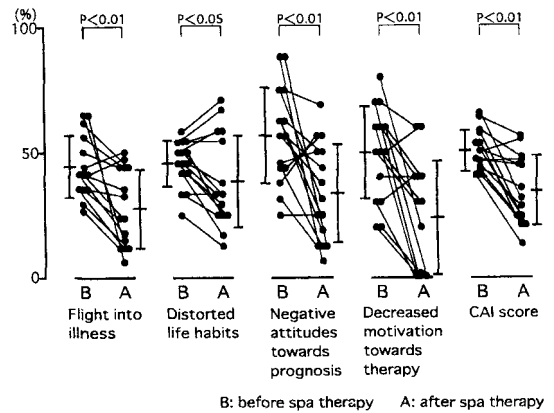


Fig. 5 -b. Evaluation on spa therapy by a CAI method in asthma patients with CAI score of 40 or over before and after the therapy.

by increased tension of parasympathetic nerve system.

It has been shown that asthma is often affected by psychological disorders^{15,16}; particularly closely associated with depressive state^{17,18}. Haida et al reported that many patients with severe asthma lacked enthusiasm for therapy, possessed pessimistic feelings towards their prognosis, and also had personality traits of extroversion in combination with psychological instability¹⁹. They also showed that asthmatics with chronic attacks had depressive/neurotic tendencies with decreased activity²⁰. The results in this study revealed that a high score over 40 points in SDS test suggesting neurotic tendencies was observed in a half of subjects with asthma. The subjects also showed a high score in physical symptoms from respiratory system and cardiovascular system in CMI test, and in categories of dependency and negative attitudes towards prognosis in CAI test.

Environment around a health resort where spa therapy is performed makes persons

more comfortable and gives them mental relaxation. In asthma patients, improvement of symptoms¹⁻³⁾ and ventilatory function^{4,5)}, and suppression of bronchial hyperresponsiveness^{6,7)} are observed as direct action of spa therapy. Furthermore, indirect action of spa therapy is shown by improvement of suppressed function of adrenocortical glands^{8,9)}. In this study, improvement of psychological disorders was observed after spa therapy. The improvement of mental disorders by spa therapy was more remarkable in physical symptoms from respiratory system and cardiovascular system and CIJ symptoms in CMI test, in SDS score representing depressive state, and in categories of conditioning, suggestion, flight into illness, negative attitudes towards prognosis and decreased motivation towards therapy in CAI test. These results suggest that spa therapy produces beneficial changes in psychological profiles for treatment of asthma.

References

1. Tanizaki Y, Sudo M, Kitani H, Kawauchi K, Mifune T, Okuda H, Soda M, Takahashi K and Kimura I : Clinical effects of spa therapy on patients with bronchial asthma. Comparison between immediate and distant effects of spa therapy. *J Jpn Assoc Phys Med Balneol Climatol* 53 : 147-152, 1990.
2. Tanizaki Y, Kitani H, Okazaki M, Mifune T, Mitsunobu F, Okuda H, Takatori A, Ochi K and Harada H : Clinical effects of spa therapy on bronchial asthma. 1. relationship to clinical asthma type and patient age. *J Jpn Assoc Phys Med Balneol Climatol* 55 : 71-81, 1992.
3. Tanizaki Y, Kitani H, Okazaki M, Mifune T, Mitsunobu F, Ochi K, Harada H and Kimura I : Clinical effects of spa therapy on bronchial asthma. 7. Relationship between spa effects and airway inflammation. *J Jpn Assoc Phys Med Balneol Climatol* 56 : 79-86, 1993.
4. Tanizaki Y : Improvement of ventilatory function by spa therapy in patients with intractable asthma. *Acta Med Okayama* 39 : 441-446, 1985.
5. Tanizaki Y, Kitani H, Okazaki M, Mifune T, Mitsunobu F, Okuda H, Takatori A, Ochi K and Harada H : Clinical effects of spa therapy on bronchial asthma. 2. Relationship to ventilatory function. *J Jpn Assoc Phys Med Balneol Climatol* 55 : 82-86, 1992.
6. Tanizaki Y, Kitani H, Okazaki M, Mifune T, Mitsunobu F, Okuda H, Ochi K, Harada H, Takahashi K and Kimura I : Clinical effects of spa therapy on bronchial asthma. *J Jpn Assoc Phys Med Balneol Climatol* 56 : 136-142, 1993.
7. Tanizaki Y, Kitani H, Okazaki M, Mifune T, Mitsunobu F, Honke N and Kimura I : Clinical Effects of complex spa therapy on patients with steroid-dependent intractable asthma (SDIA). *Jpn J Allergol* 42 : 219-227, 1993.
8. Tanizaki Y, Kitani H, Okazaki M, Mifune T, Mitsunobu F, Okuda H, Ochi K, Harada H, Takahashi K and Kimura I : Clinical effects of spa therapy on bronchial asthma. 8. Effects on suppressed function of adrenocortical glands *J Jpn Assoc Phys Med Balneol Climatol* 56 : 87-94, 1993.
9. Mifune T, Mitsunobu F, Hosaki Y, Yokota S, Tanizaki Y, Ochi K, Harada H, Ikeda S and Taketa K : Spa therapy and function of adrenocortical glands in patients with steroid-dependent intractable asthma (SDIA). Relationship to clinical asthma type, patient age, and clinical

- efficacy. *J Jpn Assoc Phys Med Balneol Climatol* 59 : 133–140, 1996.
10. Tanizaki Y, Kitani H, Mifune T, Mitsunobu F, Kajimoto K, Yokota S, Ochi K and Harada H : Effects of spa therapy on psychological factors in patients with bronchial asthma. *J Jpn Assoc Phys Med Balneol Climatol* 58 : 153–189, 1996.
 11. Tanizaki Y, Kitani H, Mifune T, Mitsunobu F, Ochi K, Harada H and Kimura I : Ten-Year study on spa therapy in 329 patients with bronchial asthma. *J Jpn Assoc Phys Med Balneol Climatol* 57 : 142–150, 1994.
 12. Tanizaki Y, Komagoe H, Sudo M and Morinaga H : Clinical effects of spa therapy on steroid-dependent intractable asthma. *Z Physiother* 377 : 425–428, 1985.
 13. Tanizaki Y, Kitani H, Okazaki M, Mifune T, Mitsunobu F, Okuda H, Ochi K, Harada H and Kimura I : Clinical effects of spa therapy on bronchial asthma. 5. Efficacy of inhalation with iodine salt solution. *J Jpn Assoc Phys Med Balneol Climatol* 55 : 179–185, 1992.
 14. Kitani H, Mitsunobu F, Mifune T, Okazaki M and Tanizaki Y : Clinical effects of spa therapy on bronchial asthma. 3. Efficacy of fango therapy. *J Jpn Assoc Phys Med Balneol Climatol* 55 : 127–133, 1993.
 15. Strunk RC, Mrazek DA, Fuhrmann GS and LaBrecque JF : Physiologic and psychological characteristics associated with deaths due to asthma in childhood ; a case control study. *JAMA* 254 : 1193–1198, 1985.
 16. Boulet LP, Deschesnes F and Gignac F : Near fatal asthma : Clinical and physiologic features, perception of bronchoconstriction and psychologic profile. *J Allergy Clin Immunol* 88 : 828–846, 1991.
 17. Miller B : Depression and asthma : A potentially lethal mixture. *J Allergy Clin Immunol* 80 : 481–486, 1987.
 18. Strunk RC : Workshop on the identification of the fatality-prone patient with asthma. *J Allergy Clin Immunol* 80 : 455–457, 1987.
 19. Haida M, Ito K, Makino S and Miyamoto T : Psychological profiles of patients with bronchial asthma. First report : Analysis according to the difference in severity of asthma. *Jpn J Allergol* 44 : 16–25, 1995.
 20. Haida M, Nomura Y, Ito K, Makino S and Miyamoto T : Psychological profiles of patients with bronchial asthma (II). Analysis according to the modes of attack in severe asthmatics and in those with fatal asthma. *Jpn J Allergol* 44 : 143–159, 1995.

温泉療法による気管支喘息患者の心理的障害の改善

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気管支喘息に対する温泉療法（1～2ヶ月）による心理的障害の改善を評価するために、3種類の心理学的調査：CMI（Cornel Medical Index）、SDS（Self-rating Depression Scale）、CAI（Comprehensive Asthma Inventory）を、気管

支喘息患者37例を対象として、入院時と退院時に実施し比較した。①CMIでは、身体的自覚症、呼吸器系症状およびCIJ症状が、温泉療法後に有意に改善した。②SDS値が40以上の症例において、温泉療法後、平均値は45.7から37.5へ有意に減少した。③CAIの種々の心理学的項目により評価した心理的障害は、温泉療法後に有意に改善した。各心理項目の平均値であるCAIスコアは、治療後、37.1から27.8へ有意に低下した。これらの結果から、気管支喘息患者に観察される心理的障害は、温泉療法により改善することが示唆された。

Key words：気管支喘息，温泉療法，心理テスト（CMI, SDS, CAI）