

Effects of 20% Aluminum Chloride in Axillary Hyperhidrosis not Accompanying Osmidrosis

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Objective : Surgical treatment of focal axillary hyperhidrosis is often unsatisfactory because of compensatory hyperhidrosis. The purpose of this study is to evaluate the effect of decreased sweating production using 20% aluminum chloride on axillary hyperhidrosis.

Methods : From February to December, 2002, 10 patients (mean age 25.2 male 2, female 8) with clinical diagnosis of axillary hyperhidrosis were treated by 20% aluminum chloride solution. Until the desired degree of symptom relief was obtained, they were educated to apply every day and thereafter, the agent would be applied as often as is necessary. We analyzed patient's satisfaction and application time at onset of desired dryness, application interval to maintain the relief of symptom and side effects.

Results : Aluminum chloride solution was effective in treatment of axillary hyperhidrosis showing excellent result in 60% of patients and good in 40%. Application time at onset of desired dryness ranged from 1 to 6 days (mean 3 days). Application interval to maintain the relief of symptom ranged from 5 to 45 days (mean 12 days). There were no significant complications but just mild irritation and miliaria in seven patients.

Conclusion : 20% aluminum chloride solution is the simple, safe and less expensive method for initial treatment for axillary hyperhidrosis not accompanying osmidrosis.

KEY WORDS : Axillary hyperhidrosis · 20% aluminum chloride solution · Initial treatment.

Introduction

The characteristics of primary axillary hyperhidrosis is the excessive sweating restricted to the axillary area without accompanying other diseases. Generally, it is worsened by emotional stress rather than heat or exercise. It may accompany osmidrosis. Presently, various treatments have been applied to treat the disease, such as antiperspirants, electrophoretic methods, administration of botulinum toxin to the vicinity of the lesion, sympatricotomy, etc. However, to become the first line treatment, the treatment must be simple, safe, economical, and clinically effective. Furthermore, it has to be primarily topical agents. Thus, we performed this study to examine the efficacy of 20% aluminum chloride solution as the first line treatment for axillary hyperhidrosis without osmidrosis.

Materials and Methods

The study was performed on 10 patients of primary axillary hyperhidrosis without osmidrosis, who visited

the department of neurosurgery at our hospital from February to December, 2002. The study population was 2 males and 8 females. Their mean age was 25.2 years (18~32 years). All patients were instructed to dry the axillary area and to apply the appropriate amount of 20% aluminum chloride solution prior to go to bed, and wash it off on the next day. Patients were selected according to the following criteria : excessive axillary perspiration at visiting our hospital, excessive sweating for more than one year. Patients with organic disease, such as hyperthyroidism were excluded in this study.

Patients were instructed to apply the solution once a day until the desired result was obtained. Thereafter patients were instructed to apply the solution regularly according to the severity of their symptoms. The satisfaction of patients was evaluated by 5 steps according to their excessive perspiration degree. In addition, the number of applications for desired dryness, interval to maintain the relief of symptom and side effects were assessed.

Results

The satisfactory degrees of patients were as follows : excellent (more than 75% improved) by 6 patients (60%) and good (more than 50% improved) by 4 patients (40%). In all patients above, more than good results were obtained. The follow-up duration varied, from 3 months to 12 months, with

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the mean duration of 6 months. The frequency of application till the first sign of effectiveness ranged from 1 time to 6 times, with the mean 3 times. Application interval to maintain the relief of symptom ranged from 5 to 45 days (mean 12 days). Side effects were mild irritation and the occurrence of miliaria in 7 patients. However, it was not severe enough to stop the treatment. Upon application of steroid cream, the side effects subsided.

Discussion

Primary hyperhidrosis is excessive sweating of unknown etiology. The incidence is 0.6~1% in general population¹⁶. In most cases, hyperhidrosis is limited to the area where sweat glands are abundant such as the hands, the feet, the craniofacial area, and the axillary areas. Endoscopy-guided thoracic sympathectomy has been introduced recently for the treatment of patients with axillary hyperhidrosis¹⁰. However, as severe compensatory hyperhidrosis occurs more frequently in patients with axillary hyperhidrosis, they were not as satisfied as patients with the such palmar or craniofacial hyperhidrosis patients^{10,11}.

Among various therapeutic modes for primary axillary hyperhidrosis excluding topical agents, electric treatment applying iontophoresis that pass ions or salts through the body has been reported to be effective, particularly for the palmar and tarsal hyperhidrosis. However, its effectiveness is reduced on the axillary area, it may be difficult to operate, and it may induce unpleasant stimulation^{15,16}.

The recently performed procedure, injection of botulinum toxin to the lesions suppresses the release of acetylcholine by acting on the cholinergic nerve ending². In hyperhidrosis, it has been reported to exert its effect by suppressing the sweat glands that are controlled by the sympathetic nerves. Although it has been shown to be effective, the pain during the administration of drugs, financial aspects, and its temporary effect must be considered^{2,16}.

The surgical treatment of thoracoscopic T3, T4 sympathectomy has been performed only on patients unresponsive to all other treatments. Although its effectiveness has been reported, it may cause the side complications effects such as pneumothorax, pneumonia, and compensatory hyperhidrosis. Furthermore, it may be uncomfortable in ordinary life due to severe anhidrosis^{1,11,16}.

For the treatment of hyperhidrosis, topical agents must be applied prior to various other treatments described above. Among topical agents, particularly 20% aluminum solution has been reported to be superior to other topical agents in

many clinical studies^{4,13,14}.

Some investigators have suggested the mechanism of this treatment as the mechanical obstruction of the opening of sweat glands^{8,9}. However, other possibilities have been reported since perspiration did not occur even after the removal of the corneum¹². In some pathological studies of patients treated with the solution, vacuolization, atrophy and other structural change of secretory cells in the secretory area of the eccrine sweat glands in the axillary hyperhidrosis patients have been reported^{7,9}.

Topic antiperspirants containing aluminum chloride are known to be first line of therapy for axillary hyperhidrosis, yet are ineffective in the treatment of palmar or plantar hyperhidrosis because the skin is much thicker³. The prerequisites for obtaining satisfactory results are as follows. To be effective, the solution must be applied for 6-8 hours. The area must be dried prior to application¹⁶. If the area was moist, hydrochloric acid may be formed, resulting in severe irritation. The solution must be applied before go to bed as the activity of the eccrine sweat glands decrease during sleep at night. As perspiration resumes on the next morning, the solution must be washed off after arising. In fact, despite of such precautions, the irritation has been reported in 50% of patients¹⁴. In our study, 7 patients experienced mild irritation. In most cases, the irritation can be managed with the application of topical steroid. To neutralize irritating hydrochloric acid, triethanolamine has been applied⁶.

We consider that our study clinically assessed the effectiveness of 20% aluminum chloride on primary axillary hyperhidrosis during various follow-up periods, although the results have not been examined objectively. Statistical analysis of our study was not feasible as the study population was small. However, the result showed the fast reaction time of the solution since most patients experienced satisfactory results after 3 applications. Particularly, in regard to its effectiveness for a short duration that has been indicated as its shortcoming in some reports⁵, the effectiveness lasted for the sufficiently long period of maximum 45 days. We thus consider that 20% aluminum chloride solution may be applied as the first line treatment for axillary hyperhidrosis not accompanying osmidrosis with long lasting efficacy.

Conclusion

20% aluminum chloride has superior effect and it is simpler, safer, and more economical than other treatment methods for patients of axillary hyperhidrosis. Furthermore, its fast reaction may be anticipated. This suggests the potential of

Aluminum Chloride for Hyperhidrosis

the solution as the first line treatment for axillary hyperhidrosis not accompanying osmidrosis. For the elucidation of its mechanism and prognosis of its clinical progresses, further basic researches and clinical analysis of more cases and the results of longer follow ups are required.

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