Case report Journal of Traditional Medicines 17, 194－197, 2000

A clinical study of Hange-shashin-to (Ban-Xia-Xie-Xin-Tang) administered through a naso-esophageal feeding tube for the treatment of diarrhea related to tube feeding

Shuji YAKUBO,* Yukio OZAWA, Katsuo KANMATSUSE

The Second Department of Medicine, Nihon University School of Medicine

(*Received December 28, 1999. Accepted June 21, 2000.*)

Abstract

Some patients with difficultly orally consuming food develop diarrhea during tube feeding. In addition, such problems as constipation induced by the administration of anti-diarrheal agents also sometime occur. We treated such patients by the administration of Hange-shashin-to (Ban-Xia-Xie-Xin-Tang, 半夏瀉心湯) extract granules (manufactured with corn starch filler) through a naso-esophageal feeding tube. We examined its effectiveness in the treatment of diarrhea in 8 patients who received a three consecutive day administration of Hange-shashin-to extract granules (AB-14) (2.0 g, 3 times a day) dissolved in 40 ml of hot water. AB-14 showed good solubility and it was easily administered through a feeding tube. Its effectiveness in the treatment of diarrhea was as follows: 37.5 % of the patients showed a remarkable improvement, while 50.0 % had some improvement. No deterioration and no adverse effects such as constipation or ileus were observed. As a result, the treatment with the Hange-shashin-to was thus considered to be effective for the treatment of diarrhea during tube feeding.

Key words Diarrhea, Tube feeding, Hange-shashin-to (Ban-Xia-Xie-Xin-Tang, 半夏瀉心湯).
Abbreviation AB-14, Junkoh Hange-shashinn-to extract granule.

Introduction

Tube feeding is used for patients demonstrating difficulty in orally comsuming food due to such conditions as a disturbance of consciousness, difficulty in swallowing, and so on.[1] These patients are managed by tube feeding through a naso-esophageal feeding tube. Sometimes diarrhea occurs during tube feeding, and such diarrhea can lead to dehydration or malnutrition.[2,3] As a result, lactobacilic acid and anti-diarrheal agents, sometimes including strong anti-diarrheal agents are thus needed. However, stopping the diarrhea alone is not sufficient, because hard feces can also induce constipation or ileus which can thereafter result in the need for an abdominal operation to rescure such patients. Care must thus be taken to maintain soft feces as far as possible.[3] In addition, such medicine must be easy to administer through a tube.[4] This is a report on the therapeutic effect of administering Hange-shashin-to (Ban-Xia-Xie-Xin-Tang, 半夏瀉心湯) extract granules (manufactured by the flow-coating method with corn starch filler) through a naso-esophageal feeding tube.

Subjects and Methods

We studied 8 patients (age : 56-72, 4 males, 4 females) with diarrhea who had been on enteral nutrition with Ensure Liquid® through a naso-esophageal feeding tube. As the basal disease, seven patients had a cerebral infarction and could not com-

*〒173-8610 東京都板橋区大谷口上町 30-1
日本大学医学部第 2 内科　矢久保修嗣
30-1 Oyaguchi-kamimachi, Itabashi-ku, Tokyo 173-8610, Japan

Table I Evaluation of AB-14 for the treatment of diarrhea during tube feeding.

a)	Effect of AB-14: remarkably improved, improved, slightly improved, no change, symptoms worse, not evaluated
b)	Adversed effects of AB-14: yes, and no
c)	Clinical utility of AB-14: remarkably useful, useful, slightly useful, no difference, not useful, not evaluated

municate well, and one patient had Olivopontocerebellar atrophy. All patients were bedridden all day. During the physical examination, all patients demonstrated a fluctuating liquid sound in the abdomen.

We examined the effectiveness of treating the diarrhea in these patients with a three consecutive day administration of Hange-shashin-to dissolved in 40 ml of water at 40°C through a naso-esophageal feeding tube 3 times a day. We administered 2.0 g of Hange-shashin-to extract granules (AB-14, Junkoh Hange-shashin-to, Asahi Beer Pharmaceutical Co., LTD.). The therapeutic effects were then evaluated and classified into six grades based on observations of the change in feces. "Remarkably improved" was defined as soft feces obtained by AB-14 within 2 days. "Improved" was defined as soft feces obtained by AB-14 within 3 days. "Slightly improved" was defined as a tendency to obtain soft feces by AB-14 within 3 days. "No change" was defined as no soft feces obtained by AB-14. "Worse" was defined as a worsening of the diarrhea symptoms by AB-14. "Not evaluated" indicated that the effect of AB-14 was not evaluated. Any adverse effects, such as constipation, were also evaluated (Table I). In addition, we also evaluated AB-14 against diarrhea for its clinical utility based on both the therapeutic effect of AB-14 and its adversed effect.

Results

AB-14 dissolved easily in hot water and it, it was able to thus be administered through tube feeding (Figure 1). The improvement in the diarrhea symptoms was examined after a three day administration. As a result, 3 of 8 patients (37.5 %) showed a remarkable improvement, 4 of 8 patients (50.0 %) some improvement and 1 of 8 patients (12.5 %) no change

Figure. 1 AB-14 showed good solubility and it was easily administered through a feeding tube.

(Figure 2). We observed no deterioration or adverse effects such as constipation.

Its clinical utility was as follows: in 3 of 8 patients (37.5 %) of the patients AB-14 was evaluated as remarkably useful, in 4 of 8 patients (50.0 %) as useful, and in 1 of 8 patients (12.5 %) as no difference. Therefore, in 7 of 8 patients (87.5 %), AB-14 was evaluated as useful or better.

Discussion

Hange-shashin-to (Ban-Xia-Xie-Xin-Tang, 半夏瀉心湯) was developed in ancient China reported and is described in Shang Han Lun (傷寒論) which is a textbook of Kampo herbal medicine, Hange-shashin-to's indications are nausea, emesis, loss of appetite, soft feces, tendency for diarrhea, acute and chronic gastroenteritis, stress induced gastritis, gastritic ptosis, dysfunction of the digestive system, pyrosis, esophagitis, stomatitis, and various neurologic symptoms. The condition normally requiring this medicine is called: Hange-shashin-to Sho, which means patient

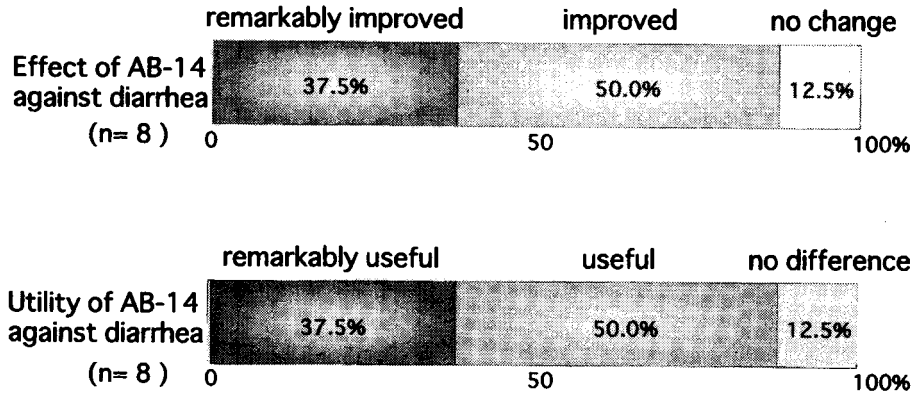

Figure. 2 Evaluation of AB-14 for the treatment of diarrhea

that shows resistance in the epigastric region and also demonstrates a fluctuating liquid sound in the abdomen based on a physical examination.[5]

The administration of Hange-shashin-to to patients with diarrhea type irritable bowel syndrome has been reported to be as follows; an improvement in 80 %, feces normalized in 60 %,[6] and also a moderate improvement in 44.4 % and a slight improvement in 55.6 %.[7] Overall, it was found to be effective for the treatment of irritable bowel syndrome in 82 %.[8]

Recently, the effectiveness of Hange-shashin-to for the treatment of diarrhea induced by an anti-tumor agent, Irinotecan hydrochloride, has been described.[9] The mechanism of action for Hange-shashin-to is considered to be due to the fact that it includes baicalein, which is as a β-glucuronidase inhibitor.

Diarrhea during tube feeding tends to occur in patients who are either not used to the enteral nutrient, the administration speed is too fast, the fat content of the enteral nutrient is too high, or the osmotic pressure is too high. Diarrhea frequently occurs at the start of tube feeding therapy, and diarrhea has been reported to occur in 19.4 %, even though no servere diarrhea occurred.[2] Diarrhea may also occur without any special reason after completing the introduction period. Sometimes there are problems in controlling diarrhea in clinical practice because the administration of lactobacillic acid and anti-diarrheal agents sometimes leads to constipation or ileus which thereafter requires an abdominal operation to save the patients.[3]

We administered Hange-shashin-to extract granules for the treatment of diarrhea during tube feeding in patients who could not consume food normally, because the administration of Kampo medicine through a feeding tube is reported to be possible when given in appropriate solutions.[11] In this study we used Hange-shashin-to extract granules (AB-14) manufactured with corn starch filler using the flow-coating method. This method is thought to give the extract granules good solubility.[12] AB-14 showed good solubility in 40ml of hot water at 40°C, and thereafter is easily administered through a feeding tube.

We examined its effectiveness in the treatment of diarrhea in patients administered AB-14 dissolved with hot water for 3 consective days. In the physical examination, all patients demonstrated a fluctuating liquid sound, but we could not identify resistence in the epigastric region due to their basal diseases. We confirmed no deterioration and no adverse effects, such as constipation or ileus, after the three day administraion of AB-14, and soft feces were observed in 87.5 % of the patients.

The mechanism of Hange-shashin-to on diarrhea symptoms is not considered to control the movement in the alimentary tract, but it is thought to regulate the Prostaglandin E2 production in the alimentary tract or promote the absorption of water. The diarrhea symptoms in 87.5 % of the patients improved and, as a result, this treatment is considered to be effective and Hange-shashin-to thus appears to be an effective treatment modality for improving diarrhea

symptoms during home enteral nutrition and no adverse effects have been reported.

Conclusion

We examined the effectiveness of administering Junko Hange-shashin-to extract granules (2.0 g, 3 times a day) dissolved in 40 ml of hot water for patients with diarrhea during tube feeding. It showed good solubility and was easy to administer though a feeding tube. We observed no deterioration and no adverse effects, such as constipation or ileus. The diarrhea symptoms improved in 87.5 % of the patients, and therefore the administration of Hange-shashin-to extract granules is considered to be an effective treatment modality for diarrhea which develops during tube feeding.

This study was presented at 50 th Congress of the Japanese Society for Oriental Medicine (Tokyo, 1999).

和文抄録

食餌の経口摂取が困難な患者に対して用いられる経管栄養療法により下痢を発症することがあるが，止痢剤の投与による便秘が問題となり，内服薬も経管による投与のため，薬剤の溶解法などに工夫も必要である。この経管栄養療法中の下痢に対してとうもろこし澱粉を賦形剤に用いてフローコーティング法で製造された半夏瀉心湯エキス剤を経鼻胃管から投与する治療に対する効果の検討を行った。経管栄養療法により下痢を発症した8例を対象に，ジュンコウ半夏瀉心湯エキス剤（AB-14）（2.0 g）を温水40 mlに溶解して経鼻経管栄養用より3回/日の投与を連続3日間行い，下痢の改善効果を検討した。AB-14は温水に容易に溶解することができ，経鼻経管栄養用のチューブを通じて投与することが可能であった。これにより下痢の改善の臨床効果は著効：37.5 %，有効：50.0 % であった。症状の悪化したものはみられず，便秘などの副作用の出現もなく，本方剤による治療は臨床上有用と考えられた。

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