

Case Report

The Application of Bo's Abdominal Acupuncture on Post-Viral Olfactory Disorder After Steroid Treatment Failure: A Case Study

Pin-Shu Lin¹, Sheng-Dean Luo², Po-Yu Huang^{1,*}

¹Department of Chinese Medicine, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

²Department of Otorhinolaryngology, Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

Objective: Post-viral olfactory disorder (PVOD) is a troublesome disorder. Only 29.6% of patient gained significant improvement after corticosteroid treatment. There have been few studies on alternative way in treating post-viral olfactory disorder (PVOD). The purpose of this case study was to investigate the effect of Bo's abdominal acupuncture in a patient with PVOD. **Case presentation:** A 52-year-old female presented with hyposmia and parosmia for over one month. At first, she noticed loss of the sense of smell after recovery from the cold, and about one week later, all her sense of smell became garlic odor. Initially she visited otolaryngologist for help. Viral sinusitis was diagnosed though image studies showed no structural abnormality that would cause conductive olfactory dysfunction. Daily steroids was prescribed for four weeks, but her sense of smell was not improved. Therefore, she came to our department of acupuncture for help. **Methods and outcome:** According to the theories of Bo's abdominal acupuncture, CV12 (Zhongwan, 中脘), CV10 (Xiawan, 下脘), CV6 (Qihai, 氣海), and CV4 (Guanyuan, 關元) were applied for conducting Qi back to its origin. Both sides of ST24, KI13, KI17, KI18, and KI19 were prescribed for symptoms of upper-jiao, especially located at head, therefore we chose them for olfactory dysfunction. Ab1 were applied for nasal diseases. SP15 was prescribed for strengthening the spleen and eliminating dampness. All acupoints mentioned above are the treatment protocol for common cold and nasal diseases. Disposable stainless steel filiform needles (30 gauges, 40mm long) were inserted and retained for 15 minutes. Acupuncture was performed twice a week for two months. During the course of treatment, her garlic smell faded away and she could recognize flavor of fruits and flowers over time. **Conclusion:**

*Correspondence author: Po-Yu Huang, Department of Chinese Medicine, Kaohsiung Chang Gung Memorial Hospital, No. 123, Dapi Rd., Niasong Dist., Kaohsiung City 833, Taiwan, Tel: +886-7-7317123 ext.2334, Email: 8705017@cloud.cgmh.org.tw

Abdominal acupuncture can improve the sense of smell and nasal symptoms of PVOD patients, without disadvantages of somatic acupuncture including painful sense and poor compliance. It might be a choice of alternative or adjuvant therapy for PVOD when patients were refractory to corticosteroids. However, the possibility of natural recovery could not be ruled out. We need more clinical cases and well-designed clinical trials to confirm the effectiveness.

Key words: Acupuncture, Abdominal Acupuncture, Bo's Abdominal Acupuncture, Post-Viral Olfactory Disorder, PVOD

Introduction

Post-viral or post-infectious olfactory loss, one of the most common causes of smell loss [1], is a disorder characterized by sudden loss of olfactory function after an episode of upper respiratory infection (URI). Patients with URI may suffer from nasal mucosal swelling and temporary conductive blockage in the olfactory cleft at first, then their olfactory function may be damaged [2]. According to related researches, the presumed cause is viral damage to olfactory epithelium, olfactory receptor neurons, or central olfactory pathway [3].

Post-viral olfactory disorders tend to be transient, but certain symptoms may be irreversible resulting in permanent parosmia, phantosmia, hyposmia, or anosmia. Spontaneous recovery of olfactory performance occurs in about one third of patients with post-viral olfactory disorders (PVOD). Recovery usually occurs within the first 6 months after the infection and occurs more common in younger patients than the elderly. Patient age, the duration of the disease and severity of initial olfactory

loss were significant predictors of the amount of improvement [4,5].

The most common treatment of PVOD is corticosteroids, both systemic and topical. Some other pharmacologic treatments, such as alpha lipoic acid and local injection of corticosteroids around the olfactory cleft have been reported in the literature, but have not gained widespread acceptance. A systemic review concluded that for patients treated with corticosteroids, only approximately 30% of them had significant improvement in objective measurements of olfaction [7]. Besides, there was very wide range of the reported adverse effect of corticosteroids, from dermatological to neurological events. [8] To lower the iatrogenic effect from long-term steroid therapy, alternative ways with less side effects could be considered in those who were resistant to classical steroids treatment.

Acupuncture therapy is well known and widely applied to various diseases. Few articles applying acupuncture treatment in PVOD patients have been published and revealed significant effect on it. However, quite a few of patients are afraid of acupuncture due to needling

pain. To solve this problem, we started trying to insert needles on abdomen under the guiding principle of Bo's abdominal acupuncture. (Figure 1)

Bo's abdominal acupuncture therapy is a relatively new method of acupuncture and has been gradually applied in variable diseases for several decades. It has advantages of safety, less pain, and rapid producing effect [11]. A study with 97 randomized controlled trials compared the effect and safety between body acupuncture

and Bo's abdominal acupuncture methods. It summarized the abdominal acupuncture appears to be more effective compared with conventional body acupuncture in various diseases including diseases of internal medicine, surgery, gynecology, pediatrics, orthopedics, and dermatology [12,13].

Treating olfactory disorder with abdominal acupuncture was rarely reported. Only one case study written in Chinese reported a 50-year-old woman, who lost sense of smell after falling to

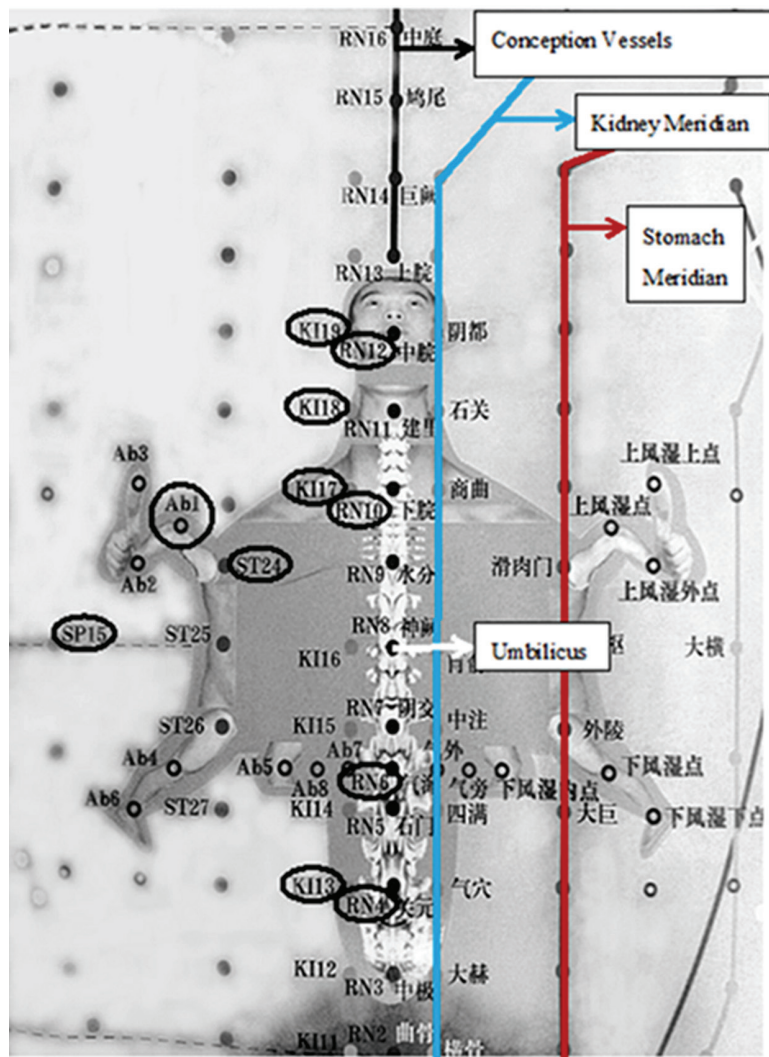


Figure 1 The somatosensory areas of Bo's abdominal acupuncture (the "turtle representation") [18].

the head with transient consciousness loss, was treated by abdominal acupuncture twice per week and got complete recovery after 6 sessions of therapy [14]. According to the above reasons, we practiced Bo's abdominal acupuncture to this patient with PVOD.

Case Presentation

1. Chief complaint

Almost loss of sense of smell and only sense of garlic odor for more than one month

2. Present illness

A 52-year-old previously healthy woman presented our acupuncture clinic with near loss of the sense of smell (hyposmia) and distortions of the sense of smell (parosmia) for over one month. At first, she caught a cold in December 2016 with symptoms including nasal congestion,

headache, and purulent sputum. However, she noticed loss of the sense of smell after recovery from the cold. About one week later, all sense of smell she could feel became only garlic odor. She did not take antibiotics, antihypertensive agent or exposure to any environmental toxin before the onset of smelling problem. There was no past history of allergic rhinitis, chronic sinusitis or other major nasal disease. Neither she nor her family had history of olfactory impairment.

Initially she visited otolaryngologist for help. Viral sinusitis was diagnosed though Water's view of the skull showed good pneumatization of paranasal sinuses without clouding. Computed tomography scan of the head showed no structural abnormality except small retention cyst of bilateral maxillary sinus floor and it would not cause conductive olfactory dysfunction. (Figure 2) Prednisolone 20 mg

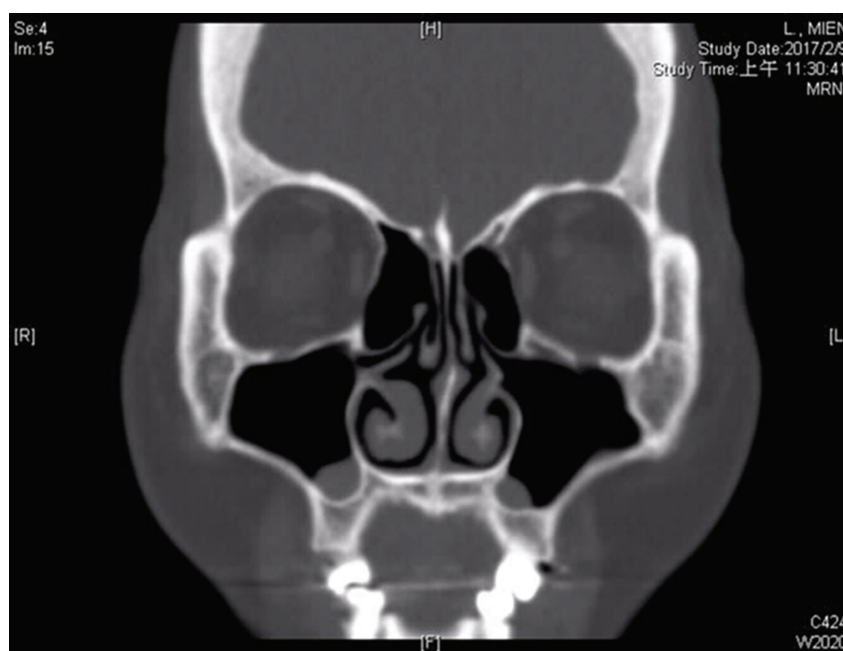


Figure 2 The CT image before treatment showed no structural abnormality except retention cyst (white arrows) of bilateral maxillary sinus floor.

tablet per day was prescribed for four weeks, but it was in vain. There was no improvement in her smelling problem. Therefore, she came to our department of acupuncture for help.

Materials and Methods

Bo's abdominal acupuncture was applied at CV12 (Zhongwan, 中脘), CV10 (Xiawan, 下脘), CV6 (Qihai, 氣海), and CV4 (Guanyuan, 關元) for conducting Qi back to its origin (引氣歸元) and at both sides of ST24 (Huaroumen, 滑肉門), KI13 (Qixue, 氣穴), KI17 (Shangqu, 商曲), KI18 (Shiguan, 石關, tender-points), KI19 (Yindu, 陰都, tender-points), SP15

(Daheng, 大橫), and Ab1 (Shangfengshidian, 上風濕點). (Figure 3 and 4) Disposable stainless-steel filiform needles (30 gauges, 40mm long) were inserted and retained for 15 minutes per treatment. Based on Bo's abdominal acupuncture theory, needle manipulation techniques were not used. Acupuncturists need to focus the mind and spirit and adjust needle depth to get symptoms improvement during acupuncture.[11] We used tables of VAS questionnaires to compare her symptoms before treatment, after treatment and six-months follow-up. We also used TDI-test to examine the severity of her sense of smell after treatment. TDI-test is a combined subjective examination by 3 subtests included Threshold

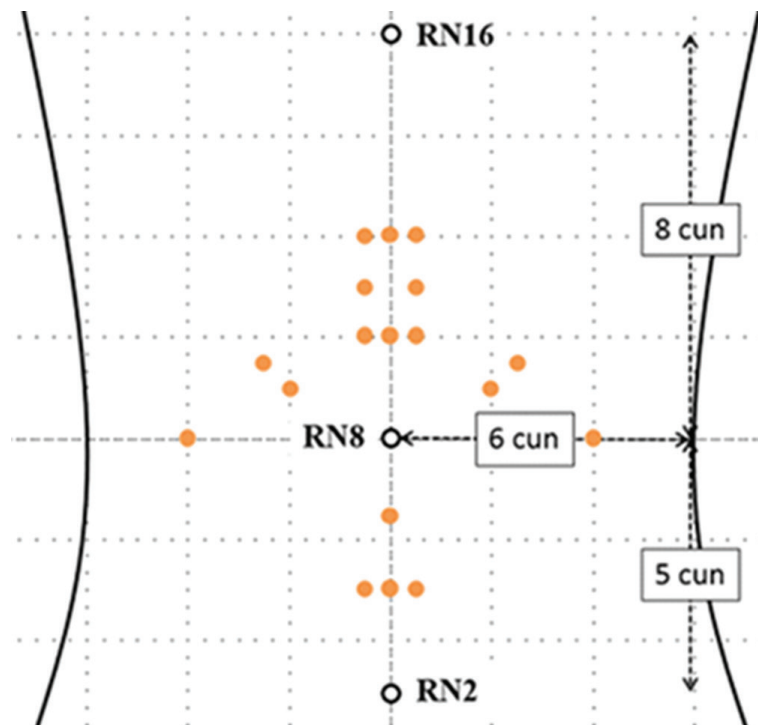


Figure 3 The acupoints we applied, including CV12, CV10, CV6, CV4, ST24, KI13, KI17, KI18, KI19, SP15 and Ab1. (Orange points) CV12, CV10, CV6, and CV4 are for conducting Qi back to its origin (引氣歸元). Both sides of ST24, KI13, KI17, KI18, and KI19 were prescribed for symptoms located at head, while Ab1 were applied especially for nasal diseases. These points are treatment protocol for common cold and nasal diseases.



Figure 4 The photo of treatment procedure.

test, Discrimination test, and Identification test. It was carried out by identifying and discriminating flavors and testing smell threshold. The results of all subtests would be added up to a score called “TDI-score”[9]. The olfactory examinations were carried out by an assistant in Otolaryngology Examination Room.

Outcome

After the first treatment, her headache subsided, while stuffy nose and sputum were improved. The garlic odor was fading and her sense of smell got better gradually during twice a week treatments. After 16 sessions were completed, she could distinguish flavor from different fruits and flowers.

We compared her symptoms before and after 16 sessions of treatment by VAS

questionnaires. (Table 1) The result revealed significant improvement. (Table 1) Compare with the initial symptoms include headache, stuffy nose, post nasal drip, and thick sputum, her symptoms almost got complete recovery. About the most troubling problem-loss the sense of smell, she could already distinguish some odor in a certain concentration after treatment. The six-months follow-up VAS questionnaires revealed stationary condition without marked improvement after stopping acupuncture treatment for her personal reasons. (Table 1)

Discussion

PVOD is a troublesome disease for otorhinolaryngologist. Improvement in olfactory function of PVOD patients may occurs, but the improvement may take several years

Table 1. The severity of symptoms before, after 16 sessions of treatment and 6 months follow-up by VAS questionnaires.

*VAS Questionnaires										
	Nasal obstruction	Sneezing	Nasal_itchy	Rhinorrhea	Nasal discharge	Post nasal drip	Sniff	Olfactory dysfunction	Headache/facial pain	Nasality
*Before	10	5	5	5.8	10	10	10	10	5.9	5.5
*After	0	0	0	0	0	0	0	6.9	0.6	0
6-months follow-up	0	0	0	0	0	0	0	6.8	0	0

*VAS score: A 10 cm thermometer-like horizontal line which has endpoints labelled “no” and “worst” symptoms, denoted 0 and 10 respectively. The scores were determined by measuring the length (cm) from 0 to the mark drawn by the patient.

*Before: symptoms before acupuncture intervention; after: remaining symptoms after 16 sessions of treatment.

[6]. Only 11.31% of anosmic and 23.31% of microsmic patients regained normal age-related function [5]. Oral corticosteroids and spray as the 1st line therapy [15] of PVOD is generally acknowledged, however, for patients treated with corticosteroids, only 29.6% of them showed significant improvement in objective measurements of olfaction [7]. Another article reported that many PVOD patients did not have improvement of olfaction after standardized treatments in Germany, Austria, and Switzerland [16]. A research performed acupuncture on PVOD patients who fail to improve after oral administration of steroids or vitamin B followed by the topical application of steroid drops or olfactory training. The study concluded that acupuncture may help PVOD patients who are refractory to classical medical therapies [10]. In our patient, her sense of smell wasn't change after four weeks steroid treatment, therefore she chose an alternative therapy, acupuncture.

However, a number of patients are afraid of needling pain. The sense of fear could decrease

the compliance of patient. The abdominal acupuncture therapy is relatively painless, safe, and effective than traditional somatic acupuncture [11]. So slight or no needling pain could increase the patient adherence to treatment [17] and may improve treatment outcomes.

We prescribed the acupoints, which were based on the stimulation of abdominal points, according to a “turtle representation” of the somatosensory areas. (Figure 1) In our abdominal acupuncture therapy, we drove the needles superficially without any stimulation. Moreover, abdominal acupuncture is merely driven by the symptom locations, thus allowing the treatment to be more standardized than in somatic acupuncture, which is comparatively based on differentiation among syndromes [18]. According to the theories of Bo's abdominal acupuncture, we prescribed acupoints of CV12, CV10, CV6, and CV4 for conducting Qi back to its origin (引氣歸元) which effective for neurologic disorder [19]. Both sides of ST24, KI13, KI17, KI18, and KI19 were prescribed

for symptoms of upper-jiao, especially located at head, therefore we chose them for olfactory dysfunction. KI17, KI18, and KI19 were also ashi-point in abdominal examination. Ab1 were applied for nasal diseases. SP15 was prescribed for strengthening the spleen and eliminating dampness. CV12, CV10, CV6, CV4, ST24, KI13, KI17, KI18, KI19, and Ab1 are treatment protocol for common cold and nasal diseases. [20, 21]

After 16 sessions of treatment, her nasal symptoms include headache, stuffy nose, post nasal drip, thick sputum, and so on, had almost recovery (Table 1), while her sense of smell got obvious improvement in distinguishing flavors, recovering from the status of everything smells like garlic to being able to recognize the scent of fruits and flowers. Though the possibility of natural recovery could not be excluded, the patient reported improving sense of smell each time right after acupuncture treatment. The patient replied the stationary condition without marked improvement after stopping the treatment 6 months later. In conclusion, we can speculate that natural recovery is not likely.

From a pathophysiological perspective, olfactory dysfunction can be classified by conductive and sensorineural types. PVOD belongs to the latter, and it could manifests as anosmia or parosmia. In this case, we can exclude the possibility of conductive abnormality diagnosis because no nasal mucosal swelling, polyps or tumor was shown on CT scan of the head. Otherwise, conductive abnormality would cause hyposmia but rare parosmia. Parosmia

often belongs to sensorineural olfactory dysfunction, and would not improve after nasal congestion recovery. Her nasal congestion is more likely an accompanying symptom of neurological abnormality rather than the direct cause of olfactory dysfunction [22].

Regretfully, the patient only receive sixteen times of treatment. Her sense of smell was not recovered completely yet. We could not know that if she had received more course of abdominal acupuncture therapy, the symptoms would improve more than we expected. We could not estimate how many times of therapy were needed to reach complete recovery. To achieve our aim, we need more cases to prove the effect of traditional Chinese medicine and more deeper researches.

The timing of abdominal acupuncture intervention is probably a prognostic factor. If the patient received abdominal acupuncture earlier, or even combine with steroids therapy, the recovery rate and level will be better or not? However, it still needs further study to tell us. In order to let patients be not very painful and safe enough during treatment process, laser acupuncture is also in our consideration options, but the effect has yet to be tried in more cases.

We used two kinds of test to estimate the change of patient's symptoms before and after treatment. The form of questionnaires showed significant improvement (50%) in subjective sense of smell. We only record patient's subjective sense of smell by "TDI-score" after treatment. Unfortunately, we didn't have her score before treatment. But we can still surmise

that her pre-treatment score must be very low because she could not sense any odor at first.

Conclusion

Abdominal acupuncture is a safe and effective new method which can improve the sense of smell and nasal symptoms of PVOD patients, without disadvantages of somatic acupuncture including painful sense and poor compliance. It might be a choice of alternative or adjuvant therapy for PVOD when patients were refractory to corticosteroids. However, more cases are needed to prove the effects of abdominal acupuncture, and we could not rule out the possibility of natural recovery. Further clinical studies are required for observing if acupuncture with concurrent steroids use may achieve better resolution of the symptoms than acupuncture alone.

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薄氏腹針治療對類固醇治療無效的病毒感染後的嗅覺異常—病例報告

林品舒¹、羅盛典²、黃博裕^{1,*}

¹高雄長庚紀念醫院中醫科系，高雄，臺灣

²高雄長庚紀念醫院耳鼻喉科系，高雄，臺灣

研究目的：上呼吸道病毒感染後發生的嗅覺異常（PVOD）是現代醫學所面臨的難題，使用類固醇治療僅 29.6% 有明顯效果，又關於傳統及替代療法的文獻並不多，於是希望能藉由此病例報告闡述薄氏腹針對於治療 PVOD 的療效。**病例報告：**這位 52 歲女性無任何慢性病史，患者以嗅覺下降及嗅覺倒錯來求診，自述 1 月底時感冒有膿痰、鼻塞、頭痛、鼻涕難擤、難呼吸，自當時便聞不到味道，而後發現嗅覺全無，1 個月後出現可聞到的氣味都似蒜頭味。西醫診斷為病毒性鼻竇炎，X 光顯示鼻竇通暢，服用類固醇已四週但未見改善。因上述症狀至針灸門診求診。我們使用薄氏腹針，穴位包括中脘、下脘、氣海、關元、滑肉門、氣穴、商曲、石關、陰都、大橫，及上風濕點等，經由一週兩次，共 16 次的針灸治療後，患者的嗅覺下降、及嗅覺倒錯獲得改善及頭痛、鼻塞等伴隨症狀消失，並且能分辨數種花香及果香等香味。**結論：**薄氏腹針對於治療 PVOD 有其效果，可以改善嗅覺及其他伴隨症狀，亦可能縮短嗅覺復原所需要的時間，當患者使用類固醇無效時，薄氏腹針可做為一種替代或是輔助治療。然而，本病例仍無法排除有嗅覺自然恢復的可能性。我們需要更多臨床案例及設計良好的臨床試驗來證實其有效性。

關鍵字：針灸、腹針、薄氏腹針、嗅覺異常、感冒後嗅覺異常

* 通訊作者：黃博裕，高雄長庚紀念醫院中醫科系，地址：833 高雄市鳥松區大埤路 123 號，電話：07-7317123 分機 2334，傳真：07-7317123#2335，Email: 8705017@cloud.cgmh.org.tw

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