Electroacupuncture Therapy for Auricular Paresthesia

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ABSTRACT

Background: The great auricular nerve (GAN) provides sensory innervation to the skin around the auricle. Although disorder of this nerve has been reported, great auricular neuralgia, as reported by Blumenthal in 1992, is uncommon. The authors report a case of auricular paresthesia that responded well to electroacupuncture treatment (EAT).

Case: A man in his 60s was consulted in the clinic after a 6-month history of experiencing tingling sensations of the skin around the auricle. General degenerative deformity of the cervical spine was observed using computed radiography scans and magnetic resonance imaging; tactile hyperesthesia in the skin of the GAN area was also noted. This case was diagnosed as a disturbance of the great auricular nerve (mild neuralgia). As a potential treatment, EAT was administered near the affected nerve once per week for 6 weeks.

Results: Visual analogue scale (VAS) measurements showed a marked decrease in the severity of this patient's symptoms, and the tactile hyperesthesia in the affected area had normalized. The main complaint, auricular paresthesia, had disappeared and had not recurred according to a check-up 15 months later.

Conclusions: EAT was effective in the current case. It is hypothesized that EAT can reduce neural sensitivity via a reflex mechanism actuated by somatosensory input.

Keywords: great auricular nerve, acupuncture, electroacupuncture, neuralgia, paresthesia

INTRODUCTION

THE GREAT AURICULAR NERVE (GAN) arises from the second and third cervical nerves, and winds around the posterior border of the sternocleidomastoideus.¹ The anterior branch of this nerve provides sensory innervation to the skin overlaying the parotid gland and angle of the mandible, while the posterior branch of this nerve provides sensation to the skin overlaying the mastoid process, and the posterior inferior aspect of the auricle, including the lobule and concha.²

Great auricular neuralgia was reported by Blumenthal in 1992.³ However, neuralgia of this nerve is uncommon.⁴

Acupuncture is a therapeutic method of Oriental traditional medicine and is used to treat various diseases.⁵ Acupuncture treatment can be performed, using a wide diversity of methods. Electroacupuncture therapy (EAT), for example, is used for pain control and for other purposes.⁶

This report discusses a case in which auricular paresthesia responded to EAT.

CASE

A man in his 60s presented with a 6-month history of tingling sensations in his right auricle, the skin around the angle of the jaw, and the mastoid process (Fig. 1).

FIG. 1. The area of the paresthesia. © 2003 So-netM3, Inc. and © 2000 WebMD Corporation. Used with permission.

This paresthesia occurred erratically, several times per day, often while the patient was lying in a lateral position. The intensity of the tingling sensation was 56 mm as measured on a visual analogue scale (VAS). The patient's daily activities were not limited, but he had a decreasing quality of life due to his discomfort. His history included cervical vertebral disc herniation and cervical canal stenosis. In the last 6 months, the symptoms had worsened, with chronic neck pain and numbness of right upper limb.

Investigations

Positive/abnormal findings. Computed radiography (CR) and magnetic resonance imaging (MRI) of the cervical spine showed general degenerative deformity in the cervical vertebrae; C-3/4 and C-5/6 vertebral disc herniation, and

canal stenosis (Fig. 2); right Spurling test (+); tactile hyperesthesia in the skin of the GAN area (modified numerical rating scale was 13; normal = 10); increased muscle tone of the right semispinalis capitis and splenius capitis muscles; and a tender point on the C-2 spinal process.

Negative/normal findings. MRI scans of the brain were normal. An inspection of the affected area showed no abnormalities and no trigger point could be identified for the tingling sensations.

Diagnosis

A diagnosis of GAN disturbance (mild neuralgia) was determined. This diagnosis was based on the area of paresthesia, on the existing degenerative changes in the cervical spine, and on its related symptoms.

Treatment

Acupuncture treatment was provided in a modern acupuncture style. EAT was administered near the right C-2/3, the C-3/4 intervertebral foramen, and the great auricular point as treatment for GAN disturbance. The great auricular point was placed at the posterior border of the sternocleidomastoid muscle as was reported in a previous study.² Additionally, EAT was performed on the bilateral splenius capitis muscle and right C-5/6 intervertebral foramen as treatment for neck pain and numbness of the right upper limb. EAT was performed for 20 minutes at 1 Hz. This intensity causes muscle twitches without discomfort. An electric stimulator (Ohm Pulser LFP-7000; Zen Iryoki Co., Ltd., Japan) and acupuncture needles (SEIRIN® J-type 0.20–50 mm or 0.24–60 mm; SEIRIN Co., Ltd., Japan) were used. The treatments were provided once per week for 6

FIG. 2. Computed radiography (left) and magnetic resonance imaging (right) of the cervical spine.

FIG. 3. Changes in the visual analogue scale for each symptom.

weeks. Other treatments, including medications, were not provided.

RESULTS

VAS measurements indicated that each symptom was markedly decreased (Fig. 3). Tactile hyperesthesia in the affected area and the tender point on the C-2 spinal process normalized. The increasing muscle tone of the right semispinalis capitis and splenius capitis muscles was also reduced.

The main complaint, the auricular paresthesia, had disappeared after 4 treatment sessions and had not recurred at the time of this patient's check-up 15 months later.

DISCUSSION

It is hypothesized that this patient's auricular paresthesia resulted from the degenerative changes in his cervical spine. This is supported by the facts as follows: CR and MRI scans showed the degenerative changes of the patient's cervical spine; an inspection of the affected area showed that it was normal; the auricular paresthesia was induced by sustained cervical bending while in the lying in a lateral position; the symptoms related to cervical degenerative deformity became worse around the same time as the onset of auricular paresthesia; and the symptom was reduced by EAT on the cervical region. Red ear syndrome is one of the causes of

unilateral auricular pain.⁷ However, a redness of external ear was not observed on inspection in this case.

Maimone-Baronello et al. reported a case of great auricular neuralgia that was supposed to result from local irritative compression caused by osteophytes impinging on the C-2 and C-3 nerves.⁸ Likewise, GAN disturbance in the upper cervical region was suspected in the current case.

In the current case, the patient's complaint was not pain but, rather, a tingling sensation. In the previously mentioned case,⁸ that patient has continued to take gabapentin regularly, and after several months of follow-up consultations, he complains only of rare episodes of light tingling in the left angle of his jaw and auricle. Thus, in the current case, the tingling sensation is considered a symptom of mild neuralgia.

EAT was effective in the current case. It has been reported that low frequency EAT could be useful for pain management.⁶ EAT applied to the current patient did not induce the stimulus sensation of the GAN. Furthermore, it is plausible that EAT administered near the affected nerve could regulate neural irritability via a reflex mechanism actuated by somatosensory input.

CONCLUSIONS

In this current case, EAT had a curative effect on the patient's auricular paresthesia that had been induced by a GAN disturbance (mild neuralgia). If correctly targeted, EAT could be effective as a treatment method for neuralgia by reducing neural sensitivity.

AUTHOR DISCLOSURE STATEMENT

The authors have no conflicts of interest associated with this report.

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