**Electroacupuncture on a patient with pacemaker: a case report**

Dimitrios G Vasilakos, Barbara P Fyntanidou

**ABSTRACT**

Electroacupuncture (EA) is commonly used for pain relief, with good results even in persistent chronic pain. However, published reports suggest that EA should not be used in patients who have a pacemaker, since there is a theoretical risk of malfunction of the pacemaker. The case is described of a 50-year-old female patient, who has had severe low back pain resistant both to conventional and unconventional treatment methods. The only treatment that seemed to have some positive effect, but of extremely short duration, was acupuncture. Her condition deteriorated considerably, and after due consideration she was treated with EA. Even after the first EA treatment, the patient’s condition improved. Since then, she has received many EA courses during the past 2 years without any complications or side effects. The results of this case study suggest that EA might be a safe alternative for patients with a pacemaker, confirming the current recommendations on use. Every patient should be considered with care, individually.

**INTRODUCTION**

The two most common techniques of acupuncture are electroacupuncture (EA) and conventional, manual acupuncture.\(^1\)\(^–\)\(^3\) EA is a widely accepted intervention for the treatment of many conditions but has been associated with interference with the function of a pacemaker.\(^4\)\(^,\)\(^5\) We report a case in which EA was given safely in the presence of a pacemaker, and was the only treatment that provided relief.

**CASE REPORT**

A 50-year-old woman has had severe low back pain since 1994. After careful examination and investigation, she was diagnosed with multifocal bone island disease, which developed in the femoral head of both limbs and on the lumbar vertebrae L4 and L5. This bone disease was considered to be a complication of an antiarrhythmic agent (flecainide acetate), which was given to the patient between 1988 and 1990 as a treatment for her episodes of tachyarrhythmia. In 1990 an ablation process was conducted, which caused complete heart block and resulted in the need for implantation of a pacemaker. The pacemaker was replaced in 1995 and 2002 and her current model is Medtronic Kappa KDR903 (Medtronic Hellas SA, Thessaloniki, Greece).

Since 2003, the patient’s condition has been deteriorating with increasing pain. The frequency and intensity of the episodes of pain have increased and the symptoms could not be alleviated by conventional analgesics. The patient complained of a constant, diffuse pain over the whole spine from the cervical to the lumbar level posteriorly, with bubonalgia (groin pain) anteriorly. Moreover, during paroxysmal episodes the pain was so intense that her mobility was totally affected and any spinal motion (flexion, extension, side bending and rotation) aggravated her condition. The only part not affected was the head.

Since 2004, the patient has been followed up in the pain clinic of University Hospital ‘AHEPA’ Thessaloniki, Greece. All oral drug regimens have had very poor results and other methods such as hydrotherapy and physiotherapy have failed to improve her pain. Furthermore, psychiatric examination suggested that no psychological condition was responsible for her condition.

The only treatment method that seemed to offer some benefit, even though of extremely short duration, was (manual) acupuncture. Therefore, after approval of the ‘AHEPA’ University Ethics Committee, a course of EA was offered to her as a promising treatment option, in the hope that it would extend the duration of response. All the possible complications were explained to her in detail and her signed consent was obtained before performing the procedure.

**INTERVENTION**

The patient was treated lying in the prone position on a comfortable bed and an ECG monitor was applied during the whole procedure. Throughout the treatment the medical team was alert to recognise and to be prepared to deal with any cardiac or other complication. The pain levels were measured on a visual analogue scale in centimetres (from 0 to 10) before and after the EA session. Sterile disposable acupuncture needles (0.25” (0.6 mm) length and 0.25 mm diameter) (Novasan, SA, Medical & Health Products, Madrid, Spain) were inserted bilaterally at the following points: BL31, BL32, BL33, BL23, BL24 and TE15. Needles were also inserted bilaterally at trigger points: one near B31 and another in the area of the trapezius muscle. In each side (right and left of the mid-line) needles at BL31 and BL33 and at BL23 and BL24 were connected together in pairs. Connection in pairs across the spinal column was avoided. An electric current (300 ms and 4 Hz) (ITO, ES-160, Program 1) was then applied to the needles. The intensity of the current was slowly increased until the patient felt a tingling and/or warm sensation at the tip of the needle. The duration of each treatment was 20–30 min twice a week.

**RESPONSE**

Even after the first treatment with EA, the patient reported pain relief. The visual analogue scale score for pain changed from 9 to 3 after the procedure and the patient’s mobility improved. These positive results lasted for 24–48 h.

Over a 2-year period, the patient received many EA treatments without any complication. No interference between electrical stimulation and pacemaker function has occurred.

The patient is now a candidate for spinal cord stimulation therapy.

**DISCUSSION**

Our patient presented with a case of chronic pain syndrome that was resistant to both conventional and alternative treatment methods. The
physiopathology of this syndrome—namely, multifocal bone island disease, is not common and does not permit any surgical intervention. The clinical situation with which we were confronted was even more complex, since a pacemaker had been implanted owing to a complete heart block.

The only treatment that had had some benefit for the patient was conventional acupuncture. However, the positive results of this procedure were of extremely short duration. Therefore, EA was suggested as a possible treatment, as it is considered to be more effective than manual acupuncture.

Some published reports have indicated that EA might interfere electromagnetically with a pacemaker and inhibit its function, and thus a pacemaker has been considered to be a possible contraindication for EA. Recommendations, supported by experimental evidence, have been made, however, for the safe use of EA in such cases, avoiding the risk of current crossing the thorax.

During the 2-year period that EA was used for our patient no complication has been reported. Moreover, the patient’s pain relief has been remarkable and considerably enhanced her life.

This case report describes the positive, uncomplicated treatment with EA of a patient with a pacemaker. However, EA should not be applied without care, every patient should be considered individually and the therapist should always be alert for the early recognition and treatment of any complication.

Anesthesiology and ICU Department, AHEPA University Hospital, Thessaloniki, Greece

Correspondence to Dr Barbara P Fyntanidou, Anesthesiology and ICU Department, AHEPA University Hospital, Stilp. Kiriakidi 1, 54636 Thessaloniki, Greece; bfyntani@yahoo.com

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