CASE REPORT

Stereotactic core biopsy of an impalpable screen-detected breast lesion using acupuncture-analgesia

R E ENGLISH, MBCHB, MRCP, FRCR and J H CHEN, MD, FBAC, FRSM

Oxford Breast Imaging Centre, Churchill Hospital, Oxford Radcliffe Hospitals NHS Trust, Old Road, Headington, Oxford, UK

ABSTRACT. Chinese acupuncture-analgesia is used for pain management during various surgical procedures. Over the past 40 years this approach has been introduced in many countries and has been particularly helpful in the investigation and treatment of patients who are unable to tolerate conventional analgesia. We report here the case of a woman with a 17-year history of myalgic encephalitis who underwent a stereotactic core biopsy of the breast under acupuncture-analgesia. A planning session was needed to assess the patient's existing condition and her response to acupuncture. During this session, a range of frequencies for electrical stimulation of the acupuncture needles using electro-acupuncture apparatus was determined. We describe the combined acupuncture and biopsy procedures and the patient's impressions and outcomes are recorded.

Received 20 August 2009
Revised 17 November 2009
Accepted 23 November 2009

DOI: 10.1259/bjr/20216505

© 2010 The British Institute of Radiology

Case report

A 50-year-old woman with myalgic encephalitis was seen for routine breast screening in a neighbouring NHS breast screening unit. She was found to have an area suspicious of a stromal deformity in the upper outer quadrant of the left breast and was recalled to the assessment clinic where ultrasound and clinical examination of this area were found to be normal. A lesion thought to be a fibroadenoma was also noted at assessment. A core biopsy of this second lesion was advised, but the patient was worried about the effect of local anaesthetic on the symptoms of the myalgic encephalitis and instead chose to have early recall after 6 months. At early recall the stromal deformity was once again noted and the well-defined opacity remained stable. The well-defined opacity was not investigated further, but the patient was advised to have a stereotactic core biopsy of the area of stromal deformity to establish the diagnosis.

The patient had experienced a major deterioration in her myalgic encephalitis status with previous administration of local anaesthetic for an unrelated biopsy the previous year; for this reason she elected to find a breast imaging unit prepared to carry out the biopsy under acupuncture-analgesia. There is no recognised mechanism for an adverse reaction to local anaesthetic, although there are proposed pathways for reactions to general anaesthesia in this condition [1]. After direct contact by the patient with our breast imaging centre, and in keeping with the National Institute for Health and

Clinical Excellence (NICE) [2] guidelines for myalgic encephalomyelitis, it was agreed that the procedure could be carried out here if she were able to find an acupuncturist. In the past, the patient had been to four other acupuncturists for treatment of muscle pain and she had found the procedure helpful.

A formal referral was made from the neighbouring breast screening unit and our trust issued an honorary contract of employment to the acupuncturist of the patient's choice. Funding for radiology and pathology services followed conventional pathways and the acupuncture fee, which was a very reasonable cost, was a private arrangement between the patient and the acupuncturist. The acupuncturist carried her own professional registration and indemnity with the British Acupuncture Council.

With a previous successful clinical experience in using acupuncture-balanced anaesthesia [3] during mastectomy in this hospital [4], it was decided to employ a similar technique of pain management for this patient during the proposed core biopsy procedure. After an initial consultation with the acupuncturist, the patient attended a second session 1 week before the biopsy for detailed acupuncture planning. During this consultation, she received a treatment course of acupuncture to stabilise her myalgic encephalitis. In addition, a set of acupuncture points and a frequency range of electric acupuncture device close (eA-DD) 2–100 Hz on the electro-acupuncture apparatus were selected for her.

On the day of the biopsy, the patient received acupuncture with the placement of a total of 10 needles around the left breast, in the back along the spine, on the back of both hands and behind the hairline in the scalp on both sides. Insertion caused no pain and the needles were flexible and taped flat against the skin so they could

Address correspondence to: Dr Ruth English, Oxford Breast Imaging Centre, Churchill Hospital, Oxford Radcliffe Hospitals NHS Trust, Old Road, Headington, Oxford OX3 7LJ, UK. E-mail: ruth.english@orh.nhs.uk

not interfere with radiographic positioning of the patient. The scout views confirmed that no needle was near the line of fire of the biopsy device, but a needle that appeared within the biopsy window was removed for complete safety with no detriment to the procedure. Electrical stimulation was optimised and connected through the needles in the left hand (Acupoint L14) and the top of the chest (Acupoint LU1) to the electro-acupuncture apparatus. The stereotactic biopsy was carried out on a GE Senographe DMR mammography unit (General Electric Company Inc., NY) using our conventional technique with a 14 G biopsy needle, but without the use of local anaesthetic (Figure 1). Six core biopsies were taken under acupuncture-analgesia. The patient was monitored closely during the procedure by the whole team, including the acupuncturist, who remained in the room and who varied the level of electrical stimulation at the request of the patient to maintain adequate pain relief.

During the procedure the patient remained calm and comfortable, and there was minimal bleeding. She described feeling sedated and yet alert, with a heavy feeling along her spine. At lower levels of electrical stimulation pulsatile sensations were induced in the left breast, while at higher levels of stimulation she experienced small electrical shocks. Pain levels during the biopsy were assessed on a scale of 0 (no pain) to 10 (intense pain). The patient described the moment of the skin incision as level 4 on the scale. During acquisition of the first three tissue samples she described a discomfort as the needle passed through the skin incision graded at level 3, but

Figure 1. Patient undergoing stereotactic breast biopsy demonstrating the position of some of the acupuncture needles.

thereafter the procedure was completely free of any discomfort or pain. At no time did she experience any sensation deeper within the breast. For comparison, two other patients were asked to score their pain levels during conventional stereotactic core biopsy. Both scored the injection of lidocaine as 1 and the biopsy sampling as 0.

On follow-up there was minimal bruising and no swelling. She required no painkillers for the biopsy site but did use some for a headache and sore throat on the third day after the biopsy. Histopathology confirmed mild fibrocystic change. The patient was reviewed in the screening unit that had made the original referral and was put back onto routine recall on the NHS Breast Screening Programme.

Discussion

Over the past 40 years Chinese acupuncture-analgesia has been introduced in many countries for pain relief during various surgical procedures [5] or for post-operative pain relief [6]. Our case is the first documented use of acupuncture-analgesia during a radiological procedure. None of the radiographic or radiological staff involved in the case had any prior experience of acupuncture either personally or professionally.

During the first meeting between the radiologist, radiographer and acupuncturist the potential problems that might be encountered in using both stereotaxis and acupuncture simultaneously were discussed and were easily resolved. An initial concern was that an acupuncture wire might be placed in the line of fire of the biopsy device during positioning of the patient in the stereotactic unit. The removal of one of the wires during this procedure for safety did not cause a problem for the patient or the acupuncturist. The needles were fine and flexible and were taped flat on the skin, causing no impediment to easy and correct positioning of the patient. From the radiologist's perspective the procedure was thereafter routine. From an organisational point of view the major allowance to be made was that the patient was in the department for longer than usual, in this case about 2 hours. The acupuncturist and patient required a quiet room in which the needles could be inserted and later removed and it was important that the atmosphere was calm and unhurried.

The mechanism of pain relief is initiated by inserting acupuncture needles into subcutaneous muscles and stimulation of neuroreceptors, sending impulses to the spinal cord and activating three centres (the spinal cord, midbrain and hypothalamus-pituitary) to cause analgesia by endorphin release. Enkephalin and dynorphin are released with electro-acupuncture apparatus stimulation at low frequency and other transmitters (perhaps γ -aminobutyric acid) with stimulation at higher frequencies. The essence of acupuncture-analgesia is to activate and intensify the physiological analgesic response to external painful stimuli.

Although not required in this case, with the addition of small quantities of additional analgesia or anaesthesia during acupuncture (a technique known as acupuncture-balanced anaesthesia), pain can be reduced by about 50% during surgical procedures [7]. Acupuncture is particularly useful in patients who are unable to tolerate

conventional analgesia, such as some with multiple sclerosis [4] and myalgic encephalomyelitis. The pain score of the procedure was slightly higher using acupuncture than when using lidocaine, but nevertheless the procedure was rendered tolerable. Other patients might wish to choose alternative therapies as a lifestyle option and such views should at least be heard by the attending clinician as per General Medical Council guidelines [8].

Conclusion

Stereotactic core biopsy of the breast under acupuncture-analgesia was well tolerated by the patient, allowing a satisfactory histological sample to be obtained. Overall the procedure was regarded as successful by the patient and all the staff involved. Given our positive experience with this patient we would be happy to offer the service to other patients who are unable to tolerate conventional local analgesia or who wish to exert patient choice.

Acknowledgements

We would like to thank the patient for contributing the account of her experience during the procedure and for her comments on the manuscript.

References

1. Crean EA. CFIDS and anesthesia: what are the risks? CFIDS Association of America. Available at: www.cfids.org/archives/2000/2000-1-article03.asp
2. National Institute for Health and Clinical Excellence. Chronic fatigue syndrome/myalgic encephalomyelitis, August 2007 CGS3.
3. Chao XD. Development of acupuncture balanced anaesthesia in Shanghai. Proceedings of the 10th anniversary of the World Federation of Acupuncture Society; 1997; Beijing, China.
4. Chen JH, Ward M. Mastectomy under acupuncture balanced anaesthesia. Proceedings of the second symposium of the Pan-European Federation of Consultants in Traditional Chinese Medicine; November 2003; Paris.
5. Han JS. Development of acupuncture analgesia. Proceedings of the 10th anniversary of the World Federation of Acupuncture Society; 1997; Beijing, China. People's Medical Publishing House.
6. Lao L, Bergman S, Hamilton G, Langenberg P, Berman B. Evaluation of acupuncture for pain control after oral surgery. *Arch Otolaryngol Head Neck Surg* 1999;125:567-72.
7. G Stux, Pomeranz B (eds). The scientific basis of acupuncture, 4th edition. 6-72 Stux G, Pomeranz B, Springer-Verlag, New York, USA 1998.
8. General Medical Council. Consent Guidance: patients and doctors making decisions together. GMC, 2008. http://www.gmc-uk.org/guidance/ethical_guidance/consent_guidance_index.asp