Case report

An acupuncture needle remaining in a lung for 17 years: case study and review

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Abstract
The case of a 67-year-old patient with an acupuncture needle remaining in his left lung is described. This foreign body was a remnant of a procedure performed by a doctor 17 years previously for osteoarthritic back pain. On the basis of this case, a review was performed of literature available in the PubMed database dealing with acupuncture needles remaining in a patient’s body. A total of 25 articles were found. The articles describe needles found in the bladder, shoulder girdle, spinal cord, right ventricle, L5 nerve root, medulla oblongata, skin, carpal tunnel, nuchal and occipital area, calf and paraspinous muscle. Migration of needle fragments to the liver, pancreas, stomach, colon, breast, kidney, muscles, and spinal cord has been reported in the literature. In cases where patients were operated on, the needles were removed without subsequent complications and the patients recovered fully.

CASE DESCRIPTION
A 67-year-old patient had an acupuncture needle fragment remaining in his lung for 15 years. On 13 March 1995, the patient underwent an acupuncture procedure in a Polish hospital as treatment for osteoarthritic back pain. This was the first time that the patient had undergone acupuncture. Needles were inserted by the physician along the spine. After 15 min, the needles were removed by a nurse. The patient had no related symptoms until 15 September 1997 when he underwent a routine chest x-ray examination, which showed a needle in his body. The only probable explanation for this was that part of one needle had broken during the procedure in 1995. It was located near the thoracic vertebrae, in the inferior lobe of the left lung (figures 1 and 2).

Since that time, the patient started to present neurotic symptoms due to fear and anxiety about his general condition. Anxiety hindered his work and private life. The patient was afraid of moving his trunk rapidly or of inhaling deeply or coughing. Since the needle was discovered, the patient has had several x-ray examinations, all of which confirmed the previous finding of the needle in the same position. Between September 1997 and March 2000 the patient was admitted to hospital three times (twice in a surgical ward and once in an internal medicine ward). Surgical removal of the foreign body was proposed, but the patient did not agree to this procedure, because it entailed a thoracotomy with an associated risk.

The patient underwent spirometry which showed normal ventilation of lungs (forced vital capacity (FVC) = 4.07 litres, 97% of normal; forced expiratory volume in one second (FEV1) = 3.04 litres, 90% of normal; FEV1/FVC% = 75%) and blood gas analysis which showed results also in the normal range (partial pressure of oxygen (PO2) = 73.1 mm Hg, PCO2 = 41.6 mm Hg, O2sat = 95.2%). He was not treated by a psychiatrist. The patient confirmed pain in the thoracic and lumbar part of spine, radiating to the lower extremities. The pain was greatest close to spine on the left side. Neurological examination performed by a court-appointed expert on 19 January 2004 showed no central or peripheral injury of the nervous system. The only abnormal result was pain on palpation of spinous processes of Th10–Th12 vertebrae. Psychological examination disclosed no personality disorders.

Up until July 2011, when the last chest CT scan was performed, the position of the foreign body did not change (figure 3). However, it remained an important cause of the patient’s worries about his general health. The hospitals’ report received by the patient on 29 July 2011 confirms that the needle is placed ‘in a distance of approximately 1 cm from the aorta in the left lower pulmonary lobe’ (figure 4). Since that time no additional x-ray examinations or CT scans have been performed and until the day this article was submitted (13 May 2012) the patient has not presented with any important symptoms or diseases. The patient was a volunteer blood donor, and had donated 47 litres of blood. But he was disqualified as a blood donor in 2005 by an examining physician because of the presence of foreign body which, according to that physician, might be a threat for a donor and recipients. The patient sued the hospital for his adverse outcome, and the court accepted his claims and awarded 20.000 PLN (approximately €5000) in compensation.

DISCUSSION
We performed a PubMed database search using the terms ‘foreign bodies’ (MeSH terms) AND acupuncture (tiab) AND needle (tiab), obtaining 25 results1–25 (last access 11 May 2012). One article1 was excluded owing to lack of an abstract in the PubMed database and publication of the paper in Japanese. Three papers were accessed as abstracts only because the full text was in Japanese.2–4 We will discuss these publications in relation to our case.

Needle breakage
Although no problem during the acupuncture was reported in our patient, it is possible that needles may be accidentally broken during the procedure because of sudden muscular contraction, body movement, coughing or sneezing.5 Needles of inferior quality or which are used repeatedly are more easily broken.5

There are also cases where needles are left in a patient’s body.
intentionally. A few authors have reported finding needles in patients who underwent ‘Hari’ acupuncture.\(^5\)\(^{–}\)\(^10\) This procedure is undertaken to improve one’s general health, treat pain, paralysis or skin diseases. A spring-loaded syringe is used to inject the 1 cm needles along predefined meridians, resulting in dozens of needles permanently placed anywhere in the body. In our patient, the needle was intended to be removed from the body, and was only left in the patient’s body because it broke.

**Symptoms and complications**

Acupuncture needles have been reported in bladder,\(^2\)\(^{–}\)\(^11\) nuchal and occipital area,\(^4\) shoulder girdle,\(^12\) spinal cord,\(^3\)\(^{–}\)\(^13\) right atrium,\(^25\) right ventricle,\(^14\)\(^{–}\)\(^15\) L5 nerve root,\(^16\) medulla oblongata,\(^17\)\(^ {–}\)\(^18\) skin,\(^19\) carpal tunnel,\(^20\) calf,\(^21\) and paraspinal muscle.\(^22\)

Because the needle in our patient was not migrating, the only symptom he developed was fear about his general condition. However, patients may develop a whole range of symptoms depending on the location of the needle. In a case described by von Riedenauer et al acupuncture needles retained in a 25-year-old patient caused pneumothorax followed by dyspnoea.\(^12\) The acupuncture procedure had been carried out 5 years before this presentation, for treatment of right shoulder pain. A case of argyria (deposition of silver in the skin) caused by embedded acupuncture needles was also reported.\(^19\) Abumi et al described a 60-year-old patient who had a needle that penetrated to the medulla oblongata, which was discovered 18 years after the acupuncture procedure.\(^18\) In the case described by Hasegawa et al,\(^23\) penetration of a fine needle into the pulmonary artery caused haemopericardium. Subarachnoid haemorrhage and spinal root injury were reported by Murata et al\(^5\) in a patient with sudden severe occipital headaches. A 33-year-old woman presented these symptoms because of a fine golden acupuncture needle left between C1 and C2 vertebrae about 50 years previously. Permanent insertion of small needles in the nuchal and occipital...
area of the body may cause clumsiness and dysesthesia of the upper limb, as described by Hasegawa et al.\(^4\) A needle found in the left dorsal medulla caused left-sided Horner’s syndrome, diminished deep sensation in the right extremities with pseudoathetosis of the right hand, together with spastic paresis of the left extremities and right carpal tunnel syndrome. Peripheral median nerve neuropathy was described by Southworth and Hartwig\(^20\) due to fracture of an acupuncture needle in the patient’s carpal tunnel. The needle between L4 and L5 vertebrae, with the tip stuck in the lumbar root for 13 months, was the reason for progressive lumbar pain, which occasionally radiated to the right lateral femoral region.\(^5\) Patient examination showed mild sensory impairment on the right lateral femoral area and limitation of straight-leg raising on both sides. The authors also describe a case of a 17-year-old male subject presenting numbness over his left foot after an acupuncture procedure performed 2 years before. The needle, stuck in the spinal cord between the C1 and C2 vertebrae and penetrated the subarachnoid space, causing Brown-Séquard syndrome. Migration of needle fragments to liver, pancreas, stomach, colon, breast, kidney, muscles, heart and spinal cord has been reported.\(^9\) \(^25\) \(^28\) When a needle migrates to the urinary tract, a calculus may be formed around the needle core, as reported by Yuzawa et al.\(^24\) In two other cases a stone was formed because of a needle remaining in the bladder and ureter.\(^2\) \(^11\)

**Figure 4**  Patient’s chest CT scan performed on 29 July 2011. The approximate distance of the needle from the aorta is 8.8 mm. Only a small part of the needle can be seen, because its course is oblique.

Needle removal
In our case the needle was not removed from the body. The decision to leave the foreign body in its position was made because of the possible complications of an operation, lack of migration of foreign body and because in many operations (e.g., laparoscopic cholecystectomy) small metal sutures are used, for example, to close the gall bladder or arteries which are left in the patient’s body forever with no complications. Complications may occur with golden needles, which may cause gold-induced myelotoxicity.\(^26\) \(^27\)

Von Riedenauer et al\(^12\) mentions that during video-assisted thoracoscopy the needle was removed from a 25-year-old American man who recovered without complication. Patrick reports needle removal from the L5 nerve root after 28 years.\(^16\) Also, in the patient described by Abumi et al\(^18\) a needle from the medulla oblongata was removed without any subsequent complications. Neely et al described a needle migrating from the abdominal cavity to the right atrium, which was removed through open-heart surgery, with the patient’s uneventful post-operative recovery.\(^25\) In other cases removal of a needle has also led to full recovery.\(^3\) \(^5\) \(^20\) \(^23\)

An interesting method of needle removal was described by Sakai et al.\(^22\) They used the ‘neuronavigator’ system consisting of a six-joint sensing arm and a personal computer to mark the shortest point from the skin to the needle on the skin surface. Using this tool, the physicians found the needle placed in paraspinous muscle.

**CONCLUSION**
Although several publications deal with acupuncture needles retained in a patient’s body, this is the first case, to our knowledge, describing a patient with a needle remaining in the lung for as long as 17 years. According to reported publications, a needle is likely to migrate to other regions of the body causing injuries. When patients have been operated on, the needles have been removed without subsequent complications and with full recovery of the patient. In our patient the needle has not migrated and is in the same position as 15 years ago.
Needle breakage is a possible complication of acupuncture, which can significantly influence a patient’s life and thus should be always taken into consideration before this procedure is performed. Using single-use, high-quality needles, and maintaining acupuncture procedure standards (eg, counting all the needles at the end of the procedure) seems to be reasonable precautions for avoiding such complications.

REFERENCES

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