CASE REPORT

Necrotising fasciitis after acupuncture treatment in an immunocompetent patient

Ariene Wypkjen Glas,¹ Anna M F M Jüttner,¹ Albertus Jozef Kooter²¹VU medisch centrum School of Medical Sciences, Amsterdam, The Netherlands²Department of Internal Medicine, VU Medical Center, Amsterdam, The NetherlandsCorrespondence to
Dr Albertus Jozef Kooter,
JKooter@vumc.nl

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SUMMARY

A 42-year old male with no significant medical history was admitted to our hospital with a painful, red, swollen right arm and fever. The rash and swelling had started in the cubital fossa. 7 days earlier, needles had been placed exactly at that site during an acupuncture treatment. After deterioration of his condition, surgical exploration of the arm revealed necrotising fasciitis. Although acupuncture is a relatively safe intervention, serious complications do occur. Necrotising fasciitis after acupuncture has been described in immunocompromised patients. To the best of our knowledge this is the first immunocompetent patient with necrotising fasciitis and toxic shock, caused by acupuncture.

BACKGROUND

Although acupuncture is considered a relatively safe intervention, serious complications do occur. Necrotising fasciitis after acupuncture has been described a few times in immunocompromised patients. We present a young, immunocompetent patient, developing toxic shock and necrotising fasciitis following acupuncture treatment. We argue that the saying 'there is no harm in trying' is not per se adequate when acupuncture is considered. Although tiny, the puncture sites may be a porte d'entrée and a cause of devastating infection.

CASE PRESENTATION

A 42-year old male with no significant medical history visited his general practitioner with symptoms of malaise, fever, dullness, and a painful, red, swollen right arm that had started 3 days earlier. The redness and swelling started in the cubital fossa. Seven days before this presentation he had undergone an acupuncture treatment on that same arm, and some needles were placed in the cubital fossa.

The general practitioner measured a temperature of 40.6°C and treated the patient with oral flucloxacillin for suspected erysipelas. However, his condition deteriorated in the ensuing hours and the patient was presented in our emergency department.

We saw a severely ill patient, with blood pressure of 90/60 mm Hg, heart rate of 130/min and temperature of 39.9°C. On his trunk and extremities he had blanching erythematous rash. His right arm was diffusely swollen from the volar side of the wrist to the armpit. The entire area was erythematous and bullae were seen in the right cubital fossa.

INVESTIGATIONS

Blood investigation showed severe inflammation with C reactive protein of 300 mg/L, leucocytes of 16.5/L (with band forms), albumin of 23 gr/L and hypocalcaemia (1.66 mmol/L). Blood cultures showed no growth (after 3 gifts of flucloxacillin). Cultures from muscle/fascia showed growth and were subsequently analysed with mass spectrometry. This revealed *Streptococcus pyogenes*.

DIFFERENTIAL DIAGNOSIS

The initial diagnosis was erysipelas of the right arm complicated by toxic shock. When the condition of the patient deteriorated necrotising fasciitis was considered which was confirmed with surgical exploration.

TREATMENT

Initially, we started treatment with intravenous fluids, amoxicillin/clavulanic acid and clindamycin. After clinical deterioration, surgery was performed with extensive debridement of the skin, fat tissue and fascia from the wrist to armpit, which revealed purulent infection focusing around the cubital fossa. The day after surgery, re-exploration of the entire area up to the pectoral and latissimus dorsi muscles and axillary lymph node dissection were performed until the healthy tissue was reached (figure 1).

OUTCOME AND FOLLOW-UP

After cultures of the muscle/fascia showed growth of *S. pyogenes*, amoxicillin/clavulanic acid was replaced by penicillin. The patient was mechanically ventilated for 8 days and needed vasoactive medication. His period in intensive care unit was complicated by renal failure due to acute tubular necrosis and severe, long-standing delirium. He slowly recovered and over the following weeks, the entire right arm showed granulomatous regenerative tissue. Seventeen days after the last surgical intervention a split-skin graft was placed on the right arm followed by complete recovery of hand and arm function.

DISCUSSION

Our patient suffered from toxic shock due to necrotising fasciitis caused by acupuncture. Necrotising fasciitis is a damaging infection of the subcutaneous tissue that spreads quickly across the fascia. There is an association known with diabetes, obesity and immunosuppressive therapy.¹

S. pyogenes is one of the most frequently encountered pathogens in monomicrobial

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Figure 1 Right arm of the patient after surgical debridement.

necrotising fasciitis.¹ This bacteria can persist in a carrier state on the skin, the pharynx, throat and the genital tract of healthy individuals and is mainly transmitted by direct human-to-human contact.²

Disruption of the skin, as in acupunctural procedures, promotes the entrance of bacteria. Acupuncturists in the Netherlands usually perform their treatments with sterile disposable needles. However, in some practices, silver and gold needles are being reused after a sterilising procedure. Acupuncturists disinfect their hands and perform their treatment without gloves. The skin of the patient is only disinfected in case of needles that stay for a longer period of time or when the needle is placed in the ear.³ This semisterile procedure holds the possibility of infection. Our hypothesis is that either our patient was an asymptomatic carrier of *S. pyogenes* on the skin or the acupuncturist did not disinfect his or her hands in a proper manner and transmitted the pathogen.

However rare, several complications of acupuncture have been described. In a cumulative review of 12 studies that included over a million patients, the rate of serious adverse events was 0.05/10 000 treatments. Among them, hepatitis B infection is the most common, followed by pneumothorax.⁴

To the best of our knowledge five cases of necrotising fasciitis after acupuncture have been described. Four of these patients can be considered immunocompromised due to aplastic anaemia, diabetes and old age.^{5–8} In one patient the immune status is unclear.⁹

Necrotising fasciitis is a serious complication with a very high mortality rate. Owing to the rapidly progressive character early

recognition is necessary. Early surgical debridement is the cornerstone of the treatment and reduces mortality. Although our patient survived eventually, his clinical course was protracted and with severe complications.

Acupuncture has a reputation of a harmless paramedical intervention. Although rare, complications do occur and can be life-threatening as is demonstrated in our immunocompetent patient who developed a severe toxic shock caused by necrotising fasciitis, following acupuncture treatment.

Learning points

- ▶ Acupuncture is regarded by many as a harmless treatment modality. Our report shows that this is not necessarily true.
- ▶ Risk of serious infection caused by acupuncture is not limited to immunocompromised patients.
- ▶ Early recognition and surgically debridement are the cornerstones in the treatment of necrotising fasciitis.

Contributors AJK was involved in the identification of case. All authors contributed in the writing and reviewing of the manuscript.

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REFERENCES

- 1 Anaya DA, Dellinger EP. Necrotising soft-tissue infection: diagnosis and management. *Clin Infect Dis* 2007;44:705.
- 2 Bessen DE. Population biology of the human restricted pathogen, streptococcus pyogenes. *Infect Genet Evol* 2009;9:581–93.
- 3 Richtlijn Infectiepreventie in de acupunctuurpraktijk. Werkgroep infectiepreventie. Juli 2008, revisie juli, 2013.
- 4 White A. A cumulative review of the range and incidence of significant adverse events associated with acupuncture. *Acupunct Med* 2004;22:122–33.
- 5 Saw A, Kwan MK, Sengupta S. Necrotising fasciitis: a life-threatening complication of acupuncture in a patient with diabetes mellitus. *Singapore Med J* 2004;45:180–2.
- 6 Hsieh RL, Huang CH, Uen WC. Necrotising fasciitis after acupuncture in a patient with aplastic anemia. *J Altern Complement Med* 2011;17:871–4.
- 7 Macuha F Jr, Ahn A, Graham R. Necrotising fasciitis associated with acupuncture: a case report. *J Hosp Med* 2010;5:565–6.
- 8 Harada K, Suzuki T, Suzuki A, et al. [Toxic shock-like syndrome after acupuncture]. *Kansenshogaku Zasshi* 1997;71:1066–70.
- 9 Onizuka T, Oishi T, Ikeda T, et al. [A fatal case of streptococcal toxic shock-like syndrome probably caused by acupuncture]. *Kansenshogaku Zasshi* 1998;72:776–80.

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