

Letter to the editor

Glass fragments in infusate and a rupture of the balloon of a continuous epidural infusion apparatus

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To the editor: We have been using a portable infusion apparatus for postoperative pain management. Our standard prescription is 1 mg (20 ml) of fentanyl, 5 mg (2 ml) of droperidol, and 20 ml of a physiological saline per day. The apparatus filled with these contents is connected to the epidural catheter. Recently we experienced a case in which the balloon ruptured

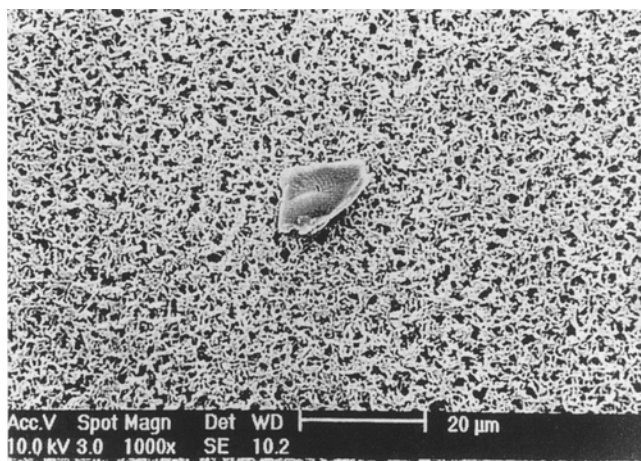


Fig. 1. Object seen under electron microscopy

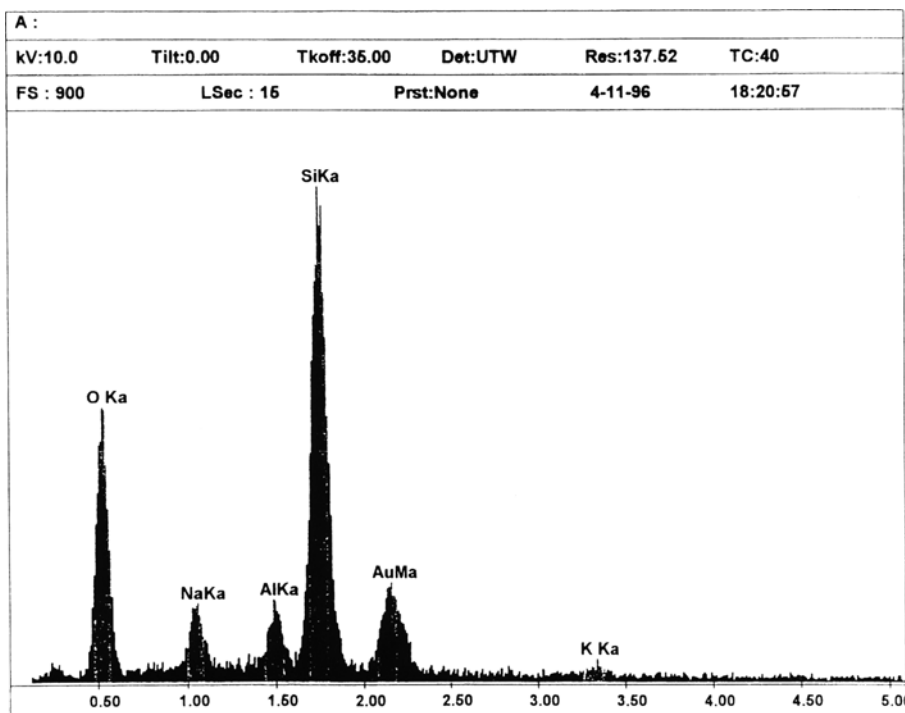


Fig. 2. Mass spectrometric presentation of the object seen under electron microscopy

approximately 20 min after the start of infusion. Considering the possibility of an ampule fragment as a causative material, we used a filter (ELD 96LYL; pore diameter, 0.2 μm ; Nihon Pall, Tokyo, Japan) to demonstrate the above-mentioned contents. In the filter an object was detected under an electron microscope (Fig. 1). It was further examined using mass spectrometry (Fig. 2). The object was composed mainly of silicon, and therefore we concluded that it was a glass fragment. The filter manufactured by Pall is too expensive for daily clinical use (1400 yen per unit), so we usually use Fine Filter F for infusion (100% elimination rate for particles 10 μm ; Hakko Shoji, Tokyo, Japan), which is less expensive (60 yen per unit). Since we began using this filter, we have experienced no balloon rupture.

In this letter we are not going to discuss the cause of the rupture of the balloon, but because drug solutions have been mainly supplied by glass ampule, we have to be more concerned about the introduction of glass fragments to the intrathecal [1] or epidural space. In fact, a clinical report [2] described a patient who, after receiving extradural block, developed motor and sensory nerve disorders in the lower leg. A

laminectomy was performed, and a minute foreign body about 20 μm in diameter was found. After this object had been removed, the patient made a complete recovery. Numerous glass fragments injected into the epidural space can constitute a very serious danger to the patient. If patients became aware of this possibility, they would certainly demand that the Japanese medical profession deal with this problem appropriately. We think that this inexpensive filter could partly prevent hazards due to glass fragments.

References

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2. Crawford JS, Williams ME, Veales S (1975) Particulate matter in the extradural space. *Br J Anaesth* 47:807

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