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Computed tomography fluoroscopy-guided lumbar sympathectomy for a patient with peripheral vascular disease and lumbar spine compression fracture

Masataka Kuroda, Shiro Koizuka, Shigeru Saito, Eri Sato, Daisuke Takizawa, and Fumio Goto
Department of Anesthesiology, Gunma University Graduate School of Medicine, 3-39-22 Showa-machi, Maebashi 371-8511, Japan

To the editor: Lumbar sympathectomy is useful for palliation of severe peripheral vascular disease that is no longer suitable for arterial reconstruction [1–3]. It is traditionally performed using X-ray fluoroscopy. The classic technique using X-ray fluoroscopy, however, is difficult to perform in patients with a deformed lumbar spine or anatomic abnormality [3]. Recently, minimally invasive, real-time imaging-guided percutaneous techniques under computed tomography (CT) fluoroscopy were added to the list of available treatment options for lumbar sympathectomy [1]. A new CT fluoroscopic guidance technique makes accurate placement of the needle tip easier and safer [1]. Here, we report a successful CT fluoroscopy-guided lumbar sympathectomy in a patient with a deformed lumbar spine due to compression fracture.

A 59-year-old man with chronic atherosclerosis obliterans had symptoms of intermittent claudication in the right lower extremity for several years. Because his symptoms were not satisfactorily improved after systemic infusion of a vasodilator and his second lumbar vertebra was markedly deformed owing to a compression fracture, we planned a percutaneous lumbar sympathectomy under CT-fluoroscopy imaging. The needle was advanced following a predesignated route under real-time CT fluoroscopy, avoiding injury to the kidney, vena cava, and ureter. After confirming that the contrast medium remained in the appropriate zone (Fig. 1) and there were no complications after a test block using a local anesthetic, 3 ml of 7% phenol per lesion was injected to sclerose the right sympathetic trunk of L2 and L3. His intermittent claudication was alleviated, and there were no complications. The CT fluoroscopy in our case used 0.176 mGy/s (10 mA and 120 kV per 3-mm slice), and the total duration of fluoroscopy was 157 s.

Lumbar sympathectomy, especially under X-ray fluoroscopy, can lead to complications, including lumbar nerve neuralgia; subarachnoid injection; perforation of the aorta, inferior vena cava, bowel, lower pole of the kidney, or ureter; and injection into the psoas muscle with a certain incidence of genitofemoral dysesthesia [3]. Furthermore, performing the

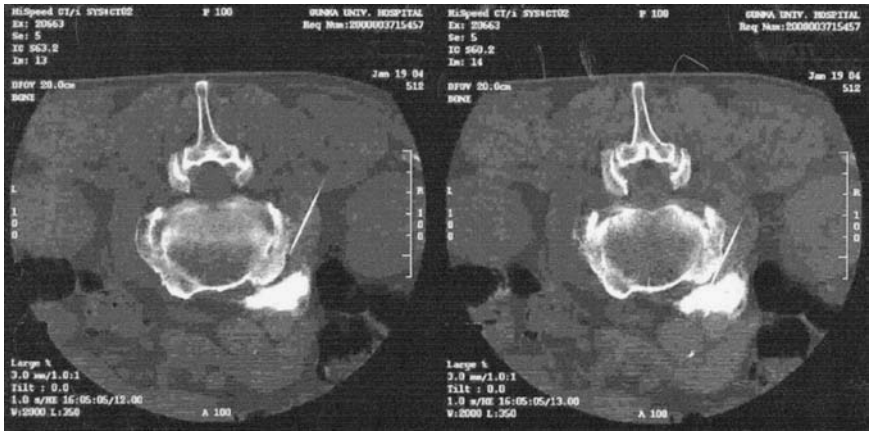

Fig. 1. Needle tip was located at the target, and contrast medium was deposited in the appropriate area

procedure in a patient with an anatomic abnormality might increase the incidence of complications. CT fluoroscopy provides a high-resolution two-dimensional image quickly to aid in accurate placement of the needle tip prior to injecting a neurolytic agent, thereby minimizing the risk of these complications. Our patient had a deformed lumbar spine caused by a compression fracture. It was expected that the risk of perforation of abdominal organs was high using the classic X-ray fluoroscopy technique. Therefore, we performed a lumbar sympathectomy using a CT fluoroscopy-guided technique.

The amount of radiation energy may be a concern during CT-guidance procedures. However, Gusmao et al. [4] reported that the radiation energy exposure to the patient and the medical staff is less during the CT-guidance technique than during conventional X-ray fluoroscopy-guidance techniques for percutaneous trigeminal nerve radiofreqency rhizotomy. This is because CT guidance allows quick, accurate needle advancement. Teeuwisse et al. reported that the amount of radiation during CT fluoroscopy was acceptable [5].

In summary, CT fluoroscopy-guided lumbar sympathectomy is safe and effective for patients with a deformed lumbar spine.

References

1. Tay VKM, Fitridge R, Tie MLH (2002) Computed tomography fluoroscopy-guided chemical lumbar sympathectomy: simple, safe and effective. Australas Radiol 46:163–166
2. Repelaer van Driel OJ, Van Bockel JH, Van Schilfgaarde R (1988) Lumbar sympathectomy for severe lower limb ischaemia: results and analysis of factors influencing the outcome. J Cardiovasc Surg 29:310–314
3. Redman DR, Robinson PN, Al-Kutoubi MA (1986) Computerised tomography guided lumbar sympathectomy. Anaesthesia 41:39–41
4. Gusmao S, Oliveira M, Tazinaffo U, Honey CR (2003) Percutaneous trigeminal nerve radiofreqency rhizotomy guided by computerized tomography fluoroscopy: technical note. J Neurosurg 99:785–786
5. Teeuwisse WM, Geleijns J, Broerse JJ, Obermann WR, van Persijn van Meerten EL (2001) Patient and staff dose during CT guided biopsy, drainage and coagulation. Br J Radiol 74:720–726

Address correspondence to: S. Koizuka
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