Case 49

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Below are CT images of a 49-year-old woman's lumbar spine:

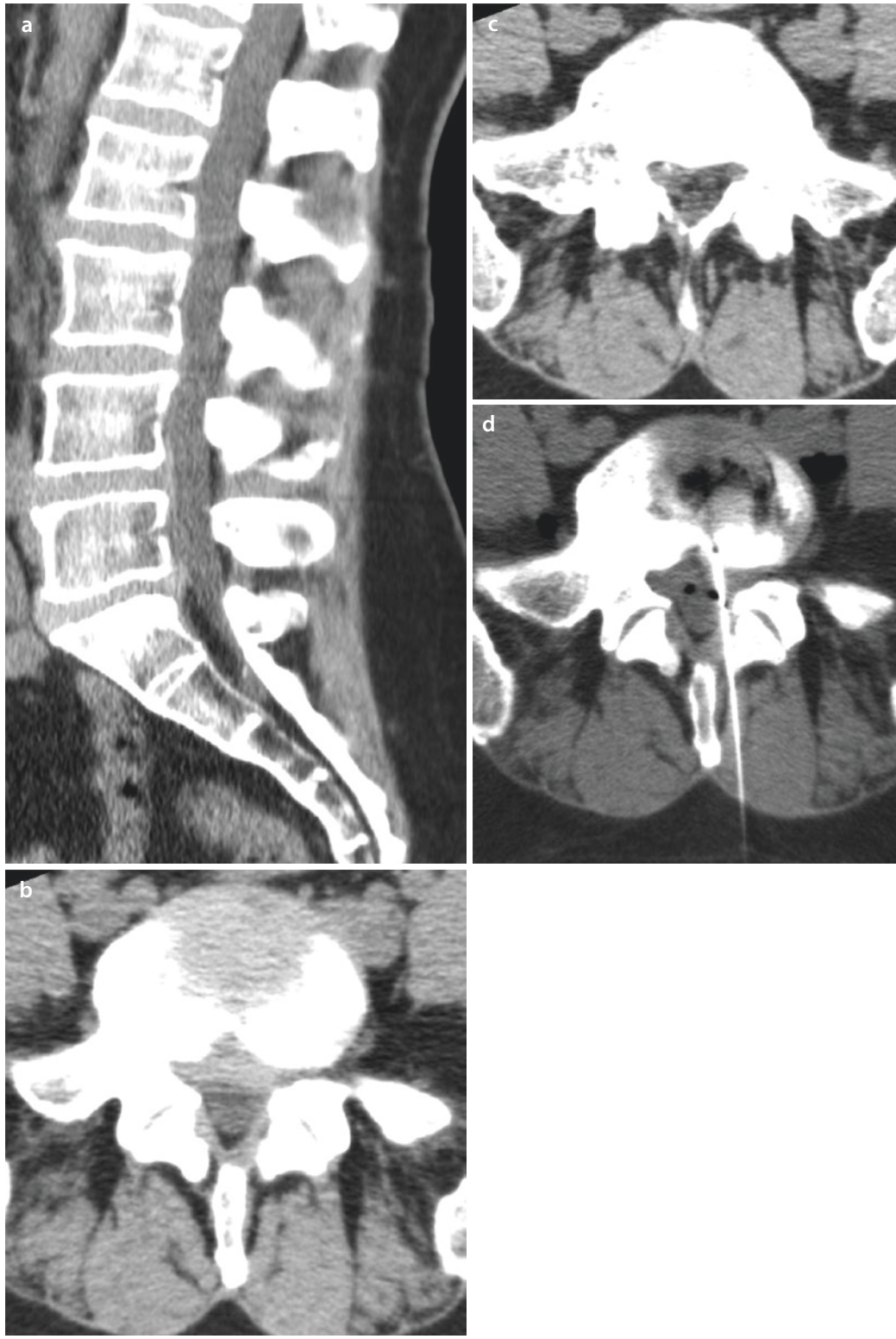

Fig. 49.1 **a** middle line sagittal slice; **b**–**d** axial slices at L5-S1 level

Question 1: What are the findings?

(a) Multilevel disc bulging.
(b) Right subarticular disc herniation at L5-S1.
(c) Vacuum degenerative disc disease at L5-S1.
(d) a and b are correct.
(e) a, b and c are correct.

Question 2: Only based on these images, which of the following could be the patient complains?

(a) Low back pain.
(b) Right sciatic pain.
(c) Left sciatic pain.
(d) a and b are possible.
(e) All are possible.

Question 3: Why is a needle inserted in the nucleus pulposus through the epidural space (◘ Fig. 49.1d)?

(a) Someone tried to do a lumbar puncture, but the target was missed.
(b) I am not sure if it is a needle. It may be another type of strange body.
(c) It must be a chemodiskolysis procedure.
(d) It must be a disc biopsy.
(e) c and d are correct.

Diagnosis *Multilevel disc degenerative disease* (easy, was it not?)

Answers and Discussion (and Embedded Captions)

Question 1: d

Sagittal image (◘ Fig. 49.1a) shows multilevel disc bulging; axial slices (◘ Figs. 49.1b, c) show disc bulging at L5-S1 (maybe a protrusion) and right subarticular disc herniation below disc level. The gas density inside disc (◘ Fig. 49.1d) is iatrogenic (see below).

Question 2: e

Disc disease can produce low back pain due to disc degeneration, annular tears or endplate changes [1]. It is very likely that there is a right S1 root compression (see ◘ Fig. 49.1c), but a left S1 root compression is also possible. Intervertebral foramina (not shown) were also reduced but without evidence of root compression (however, it should be taken into account that the examination position is dorsal decubitus, which has different forces than when standing). This patient had an ill-defined pain in left L5/S1 distribution, which stresses the fact that pain depends on the mechanical compression and on the inflammatory process. If the latter is not present, there will be no pain (besides, the extruded material tends to spontaneously shrink, so, often, one only has to overcome the acute phase). The right subarticular disc herniation had been known for 9 years, when the patient had a right S1 crisis, but she had been asymptomatic since that episode.

Question 3: c

Of course it is a needle! Lumbar punctures are usually performed at L4-L5 level without image guidance, and we are not so incautious as to reach the intervertebral disc when performing them! The needle is a thin one (22G). For biopsy, a larger device is needed (usually 14–20G). This was a chemodiskolysis procedure, by injection of an oxygen-ozone mixture (the gas density seen on ◘ Fig. 49.1d), under CT guidance. Ozone is a cheap and safe material, which has a double effect on disc disease: it shrinks the disc (the disc becomes «mummified») and has a strong anti-inflammatory effect [1, 2]. Disc puncture can be done by a paravertebral or translaminar/transligamentar approach [1]. At L5-S1 level, the safer paravertebral approach is not straightforward because of the ala of the sacrum, but a fine needle can pass through the epidural space and reach the disc, allowing an appropriate injection of the mixture. In this case, the left transligamentar puncture was preferred as the pain was on the left side, recommending a higher mixture diffusion on this side.

References

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2. Andreula C, Muto M, Leonardi M. Interventional spinal procedures. Eur J Radiol. 2004;50:112–9.