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MRI appearances of a destructive giant cell tumor and aneurysmal bone cysts of the lumbosacral spine

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CASE REPORT

We report a case of a 35-year-old man who was hospitalized on January 23, 2008 who complained of experiencing weakness on both legs for six months prior to his hospital admission. The weakness started on his left leg after he played badminton and lasted for three months. Two weeks later, he felt weakness in his right leg. He also felt cramps and pain on his lower back, and it spread down to the lower leg. The pain was aggravated by coughing and sneezing. He could not normally urinate and defecate. There was no history of trauma, fever, chronic cough, diabetes and cardiac disease. Based on neurologic physical examination, movement on the lower limb had decreased. Additionally, pathological reflex at the lower limb, the muscle tone and the physiological reflex decreased as well. Sensory functions were anesthetized from acral until S1 dermatome and hypoesthesia from the S1 dermatome until L3 dermatome in both sides. Routine and blood

chemistry analyses revealed the following results: white blood cell 8.43/mm³, red blood cell 4.21x10⁶/mm³, hemoglobin 12.7 g/dL, hematocrit 38%; platelet 310x10³/mm³, blood sedimentation rate 1 hr – 11 mm and 2 hr – 30 mm (normal value for males below 10 mm/1st hr glucose (random) 95 mg/dL, total cholesterol 194 mg/dL, HDL 46 mg/dL, LDL 70 mg/dL, triglyceride 146 mg/dL, uric acid 4.6 mg/dL, urea 29 mg/dL, creatinine 0.73 mg/dL, SGOT 15 mg/dL, SGPT 11 mg/dL, alpha-fetoprotein 1.59 mg/mL (Normal value <12.5 mg/mL), anti TB IgG - negative and prostate-specific antigen (PSA) 2.73 mg/mL (normal value <4 mg/mL). The perspiration test showed no color change from acral up to the knee (spinal cord dermatome L3). An anterior posterior (AP)/lateral view of lumbosacral X-ray showed that alignment of lumbosacral vertebrae was changed; destruction of posterior part of lumbar 4–5 vertebrae corpus and destruction of right lumbar 4 pedicles and bilateral lumbar 5 pedicles; narrowing in the vertebral discus of L4–5; bone mineralization in normal range and soft tissue was normal limit suggesting metastatic tumor to the vertebra corpus.

An magnetic resonance imaging (MRI) examination was performed with and without administration of intravenous Gadolinium (Gd-DOTA). The result revealed an extradural mass with mix-intensity (iso, hypo and hyperintense) in sagittal T1-weighted images of the lumbosacral region (Figure 1) and extradural mass with mix-intensity (iso and hyperintense) in sagittal T2-weighted images of the lumbosacral region (Figure 2). Sequential sagittal T2-weighted images Fat-Sat with MR-myelography revealed a clear border, lobulated side with the solid component of the mass, cyst containing blood (level fluid appearance) in the large areas that were spreading to the anterior and posterior regions and also damaging the surrounding bones, and compressing thecal sac and nerve roots bilaterally, that cause stenosis canalis spinalis at that level (Figure 3). These findings suggested destructive giant-cell tumor and aneurysmal bone cysts in the lumbosacral spine of vertebrae corpus L3–S2 level. The patient was recommended neurosurgical operation. The tumor was biopsied and revealed the histopathology as carcinoma metastases at the vertebrae (it was very

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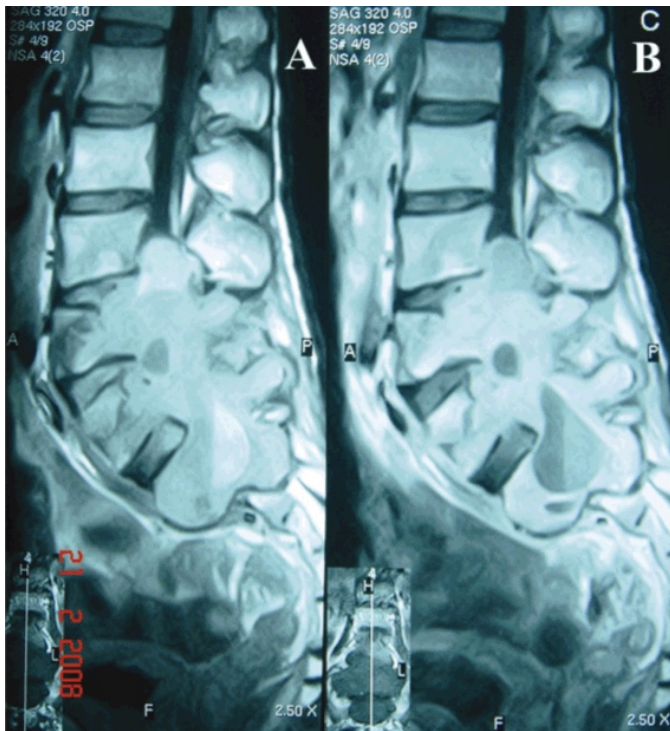


Figure 1: Sagittal T1-weighted image of the lumbosacral region without (A) and with (B) intravenous Gd-DOTA contrast showing degenerative disc disease, lumbar and extradural mass which was mix-intensity (iso, hipo and hyperintense) without Gd-DOTA contrast and became hyperintense after injecting Gd-DOTA contrast intravenously.

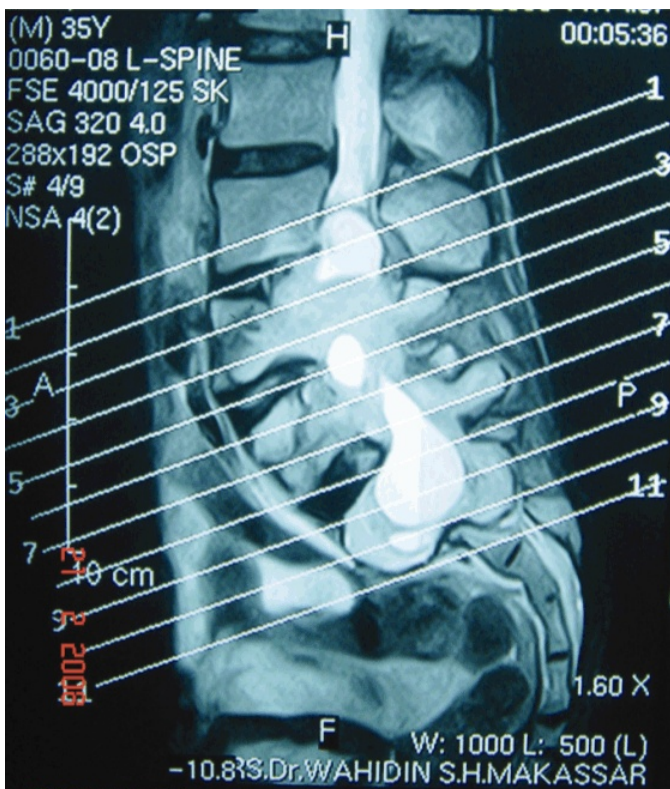


Figure 2: Sagittal T2-weighted image of the lumbosacral region showing, degenerative disc disease, lumbar and extradural mass with mix-intensity (iso and hyperintense) signal.

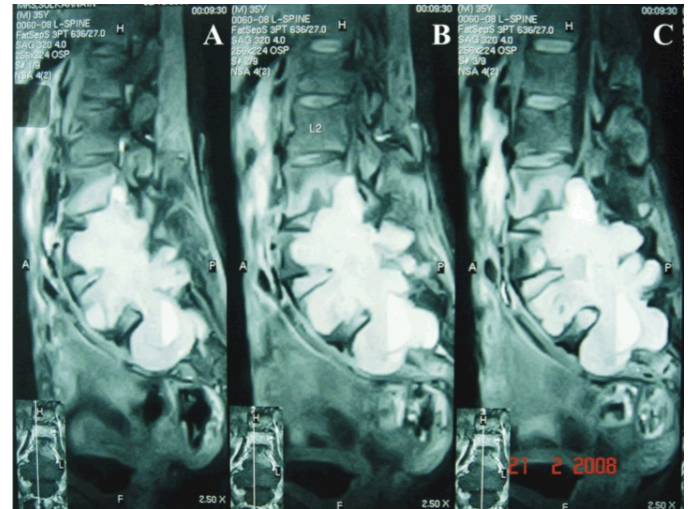


Figure 3: Sequential sagittal T2-weighted image Fat-Sat with MR-Myelography. (A) Right parasagittal T2WI, (B) Right parasagittal T2WI, (C) Sagittal T2WI, all of them showing a mass at the level of vertebrae corpus L3-S2 with clear border, lobulated side with the solid component, cyst containing blood (level fluid appearance) in the large area that spread to anterior and posterior aspects and also destroying the surrounding bones and compressing the thecal sac and nerve roots bilaterally that cause stenosis canalis spinalis at that level.

difficult to determine the primer). Patient himself wanted to be discharged from the hospital after eleventh day of operation.

DISCUSSION

Spinal tumors which can affect the spinal column consist of primary and metastatic tumors. The primary vertebral tumors of the spine are about 11% of all primary tumors of musculoskeletal, and only 4.2% of all spinal tumors, including aneurysmal bone cysts (ABC) and giant cell tumors (GCT) [1, 2]. Aneurysmal bone cyst (ABC) was first reported by Jaffe and Lichtenstein in 1942 [3]. They described it as 'blood-filled sponges' of cavernous cysts with walls of woven bone. This tumor may be found in association with other tumors such as giant cell tumors or as a secondary feature in a variety of osseous lesions, including giant cell tumors [4, 5]. In our case report, we showed that the patient complaining weakness of both of his legs was diagnosed with a giant cell tumor and aneurysmal bone cysts of the lumbosacral spine along with primary tumor. The diagnosis was based not only from the MRI but also from all the examinations, including blood examination to identify primary tumor of giant cell tumors and aneurysmal bone cysts of the lumbosacral spine.

CONCLUSION

Giant cell tumors and aneurysmal bone cysts of the lumbosacral spine are rare tumors. Radiography can be

used to diagnose spinal tumors, but CT scan and MRI is more useful and needed to determine the extent of the tumor. Specifically, in the case of imaging diagnosis, MRI is the gold standard for diagnosing this tumor.

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Author Contributions

Muhammad Yunus Amran – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Jumraini Tammase – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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