



: MR 1

2 . 2 . 2 . 3 . 4 . 5 . 2

: MR 5

1 6 4
6 3 가 3 . 6 2

: 3-7 (4.5) - 4 , 1 ,
1 가 T1 (n=1) MR (n=5), T2
(n=2) (n=4) 5 4
1 가 . 6 4 1

: 가 MR

(spontaneous spinal epidural
hematoma) Jackson 1869 (1) 5 (bleeding tendency)
400 가 . Holtas (acute myelogenous leukemia) 1
1000,000 1 6 MR
(2), 1987 MR 가 가 (3).

(vascular malformation), 1996 1999 7
6 1
(4), 5

(5). Lonjon (4) (predisposing factor)

(nontraumatic spinal epidural
hematoma) 4 2 2 77
가 가 3 가 3 . 63
MR 1 CT MR . 5
1 2 MR . 6

1
2
3
4
5
1999 8 3 1999 9 27
MR (2 -8)
MR (2 -2)

1.0T Magnetom Impact, 1.5T
 Magnetom Visions (Siemens, Erlangen, Germany) 1.5T
 (Signa, GE Medical system, Milwaukee, U.S.A.)
 T1 (TR/TE = 350-650/11-30msec)
 T2 (TR/TE = 2500-4000)
 Gadolinium-DTPA (Magnevist, Sche-ring, Germany
 0.1 mmol/kg)
 15-20 cm,
 30-35 cm matrix size 256 x 192,
 3mm, 1mm . MR
 (underlying disorder)
 . 6

(cranio-caudal direction) 3
 (C6-T1: 1, C4-T2: 1) -
 (T11-L2) 2 1, 11
 1 가1 3-7, 4.5
 (thecal sac) -
 (posterior-lateral) 4, 1, 1,
 가 . 3 가
 , 2, 1
 (n=1) (n=5), T1
 (n=2) (n=4)
 MR
 (3 -8)
 가 . T1
 6, T2
 4, 2, 4

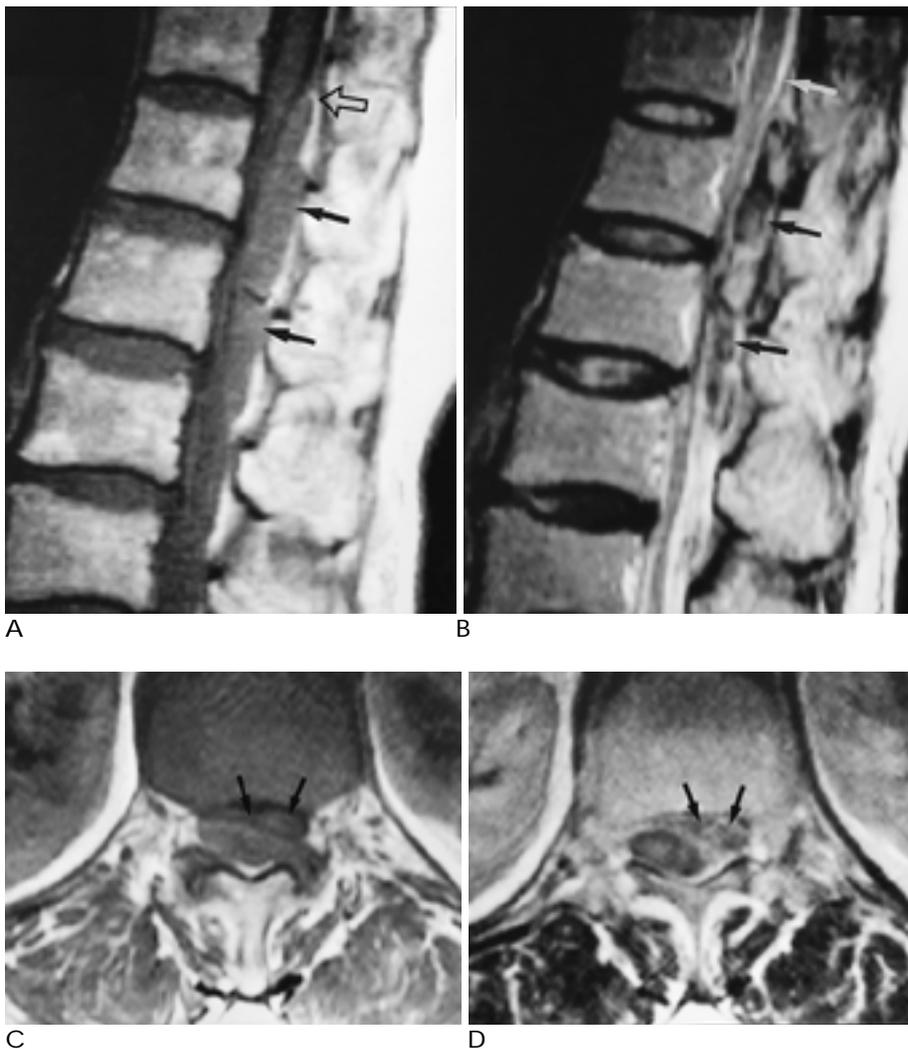


Fig. 1. A 58-year-old woman with severe lower extremity pain and weakness (case 1).

MR sagittal image shows a posterior epidural mass (solid black arrows) showing iso intensity on T1-weighted image (A) and heterogeneous hypointensity on T2-weighted image (B), representing acute stage hematoma. The lesion extends from T11 to L2 and the conus medullaris and cauda equa are displaced anteriorly. The capping of epidural fat (open black arrow) around the lesion on T1-weighted image and low signal line delineating dural sac (white arrow) on T2-weighted image support that the hematoma is located at the epidural space. MR T1-weighted (C) and T2-weighted (D) axial images well demonstrates severely compressed and deformed the conus medullaris and cauda equa (solid arrows).

CT 2 가 6 MR 가 31,000/ul 가
 12 1
 8
 14 MR
 1 가 가
 2 3 MR 11 가 가
 (conus medullaris) (cauda equina)
 (Fig. 1). 2
 3 2
 MR 6 1 MR (signal void)
 (Fig. 2). 2 6 Table 1
 2 1 3
 MR 2
 MR Beatty (5)
 4 3 3 MR 가 (6, 7).
 (Fig. 3). 4 (valve)
 MR 14 Gundry (8)
 5 (annulus fibrosus)
 7 2 MR (nucleus)
 T1 T2 가
 (6) MR 가
 2 가 (6). 가
 T6 6 2 가 가
 (sphincter dysfunction)

Table 1. Summary of MR and Clinical Findings of Patients with Spontaneous Spinal Epidural Hematoma

Case No.	Age/Sex	Interval	Presenting symptoms	Predisposing factor	Location	MRI T1/T2 SI	F/U MRI Interval / Findings	Op.
1	58/F	3 hrs	L/E pain and weakness	Hypertension	T11 - L2	Iso/Low	3 months / No evidence of rebleeding after operation	Yes
2	15/M	3 days	Neck pain and U/E weakness	None	C6 - T1	High/Low	1 week / No evidence of residual hematoma after operation	Yes
3	55/M	8 days	Neck pain and left arm weakness	None	C3 - C6	High/High	3 weeks / Complete absorption	No
4	77/F	5 days	Neck pain and right arm weakness	Hypertension	C3 - C6	High/High	NE	No
5	2/M	7 days	Local tenderness and quadriplegia	None	C4 - T2	High/High	2 years / Tiny residual old hemorrhage	No
6	5/M	2 days	L/E pain and sphincter dysfunction	Leukemia	T11 - S1	Iso/High	2 weeks / SI change to high / low	No

Note : F/U: follow-up, SI: signal intensity, Op.: operation, L/E : lower extremity, U/E: upper extremity, NE : not examined.

Rothfus (9) 1987
 MR
 MR 가 . MR
 가 (10). 1869
 1986 1987 MR
 2.2 6.4 가
 (3).
 가
 T1- (metastatic melanoma)
 MR (12).
 T1- 가
 가 (99%) 5 2 (1%) 12
 가 가 . 가 - -
 (epidural spinal venous plexus) 가 , (posterior longitudinal ligament)
 40
 (6). 6 5 -
 - 6 - 가
 가 18 80 50-80
 가 가 (6, 11). 27
 가 6 3
 가 (7) 3 2
 1 , 1
 (neural foramen)

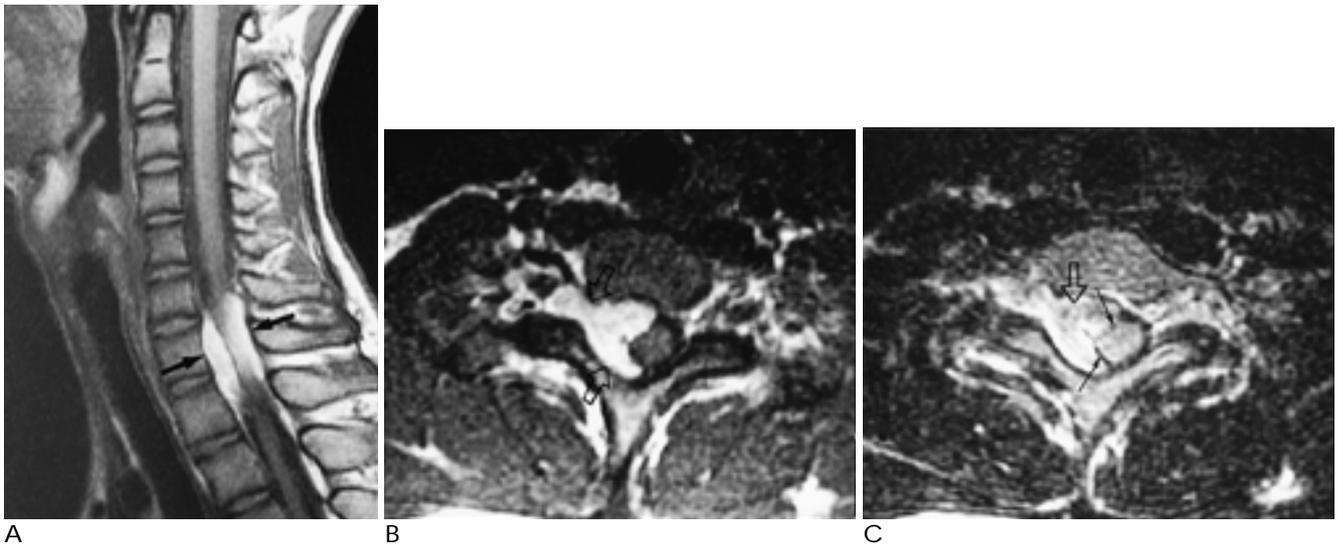


FIG. 2. A 15-year-old boy with neck pain and right arm weakness (case 2). The epidural lesion (arrows) is seen at the anterior and posterior site of the spinal cord, which is hypertense on T1-weighted sagittal image(A). On axial images at the level of the C7-T1 intervertebral disc space, the epidural hematoma (open arrows) showing high signal intensity on T1-weighted image (B) and low signal intensity on T2-weighted image (C) is laterally extending through the right neural foramen. The low signal rim (solid arrows) representing the dura and displacement of the spinal cord are well demonstrated.

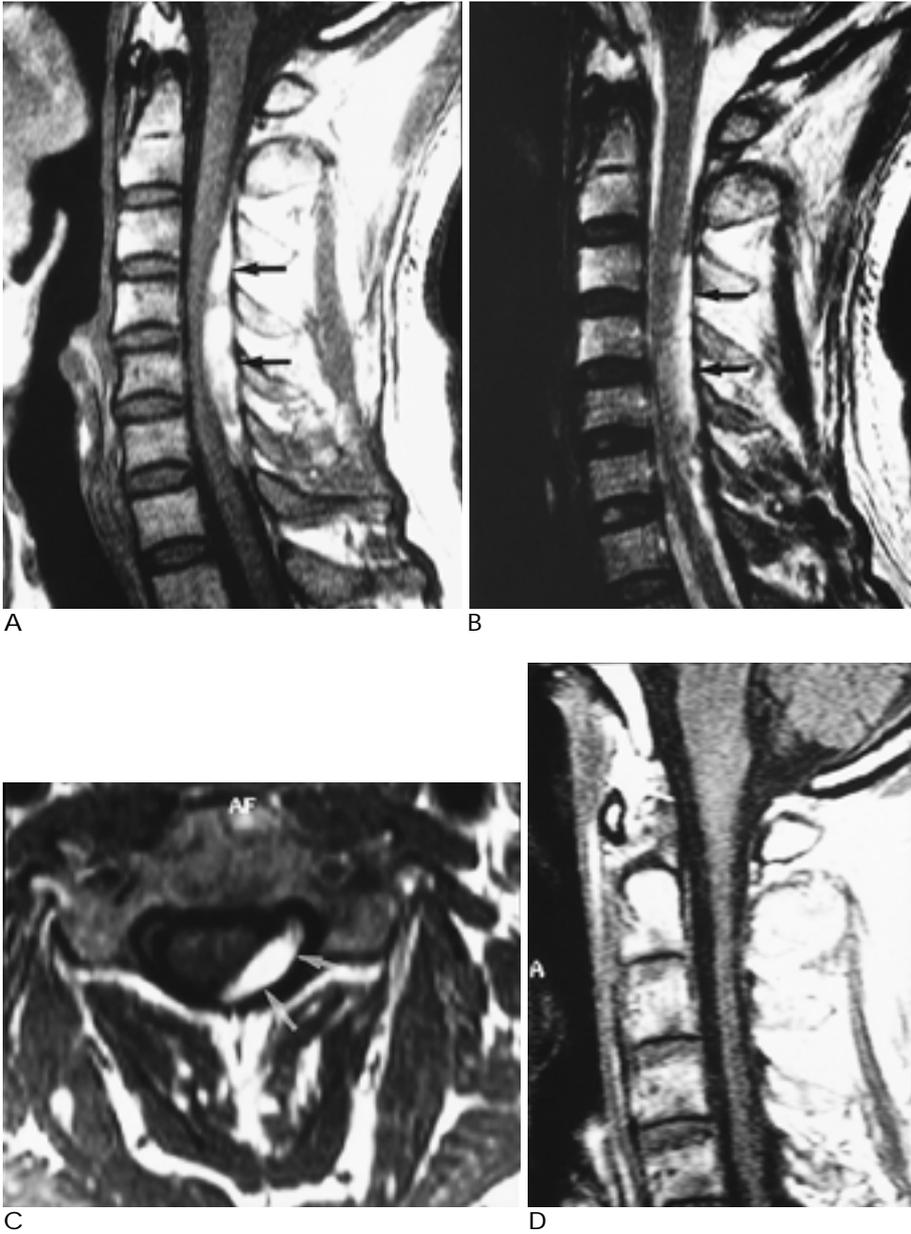


Fig. 3. A 55-year-old man with abruptly developed neck pain and left upper extremity weakness (case 3). MR images obtained 8 days after symptoms onset reveal an subacute stage-epidural hematoma (arrows) showing high signal intensity on T1-weighted sagittal (A), axial (C) and T2-weighted sagittal (B) images. The hematoma is located posterolateral to the spinal cord and extending from C3 to C6, by which the spinal cord is mildly compressed. A follow-up T1-weighted sagittal MR image (D) 3 weeks later shows complete resolution of the hematoma without surgery.

MR (12) 가 (15), Miyagi (16)

가 1, 2

3, 4 MR

4-6.5% 3

MR (6, 13), Lawton (14)

4

MR

Lonjon (4)

가

가

가 가 . 가 , 1)
 2)
 (laminectomy and hematoma evacuation)
 (11, 13, 14). Boukobza
 (17) Wagner (18)

Jamjoom(3) 1987
 1.5% 1987
 29% 가
 가 MR
 가
 2 3,
 4 MR
 MR
 가 가 가
 가 가
 MR 가

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MR Imaging and Clinical Findings of Spontaneous Spinal Epidural Hematoma¹

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Purpose : To describe the MR imaging and clinical findings of spontaneous spinal epidural hematoma.

Materials and Methods : The MR and clinical findings in six patients (M:F= 4:2;adult:child= 3:3) with spontaneous spinal epidural hematoma were reviewed. Five patients without any predisposing factor which might cause the condition and one with acute myelogenous leukemia were included. Emergency surgery was performed in two patients, and the other four were managed conservatively.

Results : The epidural lesion involved between three and seven vertebrae (mean: 4.5), and relative to the spinal cord was located in the posterior-lateral (n= 4), anterior (n= 1), or right lateral (n= 1) area. The hematoma was isointense (n= 1) or hyperintense (n= 5) with spinal cord on T1-weighted images, and hypointense (n= 2) or hyperintense (n= 4) on T2-weighted images. It was completely absorbed in four of five patients who underwent follow-up MR imaging, but not changed in one. The clinical outcome of these patients was complete recovery (n= 4), spastic cerebral palsy (n= 1), or unknown (n= 1).

Conclusion : Because of the lesion's characteristic signal intensity, MR imaging is very useful in the diagnosis and evaluation of spontaneous spinal epidural hematoma.

Index words : Spine, hemorrhage
Spine, MR

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