# Cauda equina syndrome with normal lumbar myelography

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The consequences of signs of emergency compression of cauda equina in combination with a normal lumbar myelography are reported in 19 patients. Two of them had a tumor and a herniated disc, respectively, in the thoracic spine discovered by a second myelography. One patient was considered to have a hysterical paresis. In 3 patients the symptoms were attributed to diseases not related to the spine. Thirteen patients recovered spontaneously.

We conclude that the prognosis for patients with signs of compression of the cauda equina is favorable provided the myelography is normal; surgical exploration is then not indicated. However, if severe unexplained symptoms persist and computed tomography is normal, myelography of the thoracic spine should be considered.

There is general agreement on early aggressive treatment (1, 2) of patients diagnosed as having compression of the cauda equina. When the radiographic examination shows the the location of the compression, the patient is usually subjected to surgery as soon as possible. Not infrequently, however, the clinical findings strongly suggest compression of the cauda equina, whereas the myelography turns out to be normal.

We have studied the consequences for patients manifesting clinical signs of acute compression of the cauda equina, but displaying entirely normal myelography.

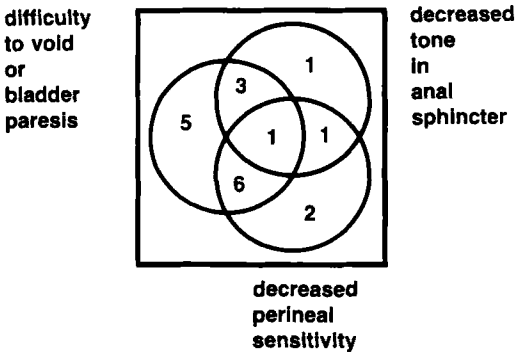


Figure 1. The distribution of signs of cauda equina compression (n = 19).

## Patients and methods

During the years 1975-1985, emergency lumbar myelography was performed at our hospital in 51 patients. Among them, 21 myelographies were quite normal, showing no signs of any interference with the cauda equina or the spinal medulla.

The case histories of these patients were studied and included in the present investigation provided that they met the following prerequisites: 1) pain in the back or leg in combination with a sign of compression of the cauda equina, i.e., saddle anesthesia; 2) difficulty in voiding; or 3) decreased tone of the anal sphincter (Figure 1).

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Eight patients had difficulty in voiding and 7 had a bladder paresis, often in combination with a decreased perineal sensitivity. The difference between the sign "difficulty to void" and that of "bladder paresis" is that patients with the former sign could pass urine voluntarily, but patients with the latter sign had to be catheterized. Ten patients were examined by a consultant neurologist, but he did contribute any additional diagnoses.

A questionnaire with regard to additional treatment and remaining symptoms was presented to the patients to be filled in. In patients who were moved to another hospital with a neurologic unit, also the case histories from that hospital were obtained and studied.

Nineteen of the original 21 patients answered the enquiries. One had died of a heart disease several years

after a negative myelography. Another patient came from Norway and could not be traced. The median age of the 19 patients who replied to the questionnaire was 40 (16-72) years (Table 1). Eight were men and 11 were women. The median follow-up time was 5 (1-9) years.

Myelography was performed within 12 hours from admittance to the hospital. The contrast employed was metrizamide (Amipaque®, 170 mg iodine/mL) until 1983 and then iohexol (Omnipaque®, 180 mg iodine/mL); both substances were obtained from Nycomed Oslo AS). The amount injected was 12–15 mL.

In all the cases the images of the lumbar area were technically satisfactory (4 cases with doubtful findings had been excluded previously). None of the patients underwent computerized tomography. No cystometry was performed.

## Results

Lumbago/sciatica was the final diagnosis in 13 patients, all of whom eventually recovered. Five of these patients have no residual symptoms, 1 after an operative fusion between the fourth and fifth lumbar vertebrae. Eight patients still have occasional episodes of lumbago, associated with some difficulty in voiding in 5 patients.

In 3 patients the symptoms were caused by diseases not involving the spine. One patient, who had pain in the back and difficulties in voiding, turned out to have a uretral calculus. Another had a bladder paralysis and a weak sphincter, and developed signs of an perianal abscess after a few days. The third patient, a woman suffering from rheumatoid arthritis, in addition to having a painful back suddenly felt weakness in her legs, and a decreased sphincter tone was observed. The di-

Table 1. 19 patients with cauda equina syndrome

| A | B | C | D | E | F | G | H | I | J | K | L | M | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AÅ | 72 | F | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | Th7 | | Lumb/scia |
| GU | 27 | M | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | Th10 | Th7 | Vascular tumor |
| EA | 57 | F | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | Th9 | | Vasculitis |
| CM | 35 | F | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | Th11 | | Lumb/scia |
| MS | 58 | M | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | Th6 | Disc hernia |
| EB | 31 | F | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | Th8 | | Lumb/scia |
| LÅ | 43 | F | 1 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | Th3 | | Lumb/scia |
| SE | 26 | F | 1 | 2 | 2 | 1 | 2 | 2 | 0 | 1 | Th6 | | Unclear/psych |
| KL | 29 | F | 1 | 1 | 2 | 1 | 2 | 0 | 0 | 2 | Th4 | | Lumb/scia |
| AA | 18 | F | 1 | 2 | 2 | 1 | 2 | 2 | 0 | 2 | Th5 | | Lumb/scia |
| JS | 51 | M | 1 | 2 | 1 | 1 | 2 | 2 | 0 | 2 | Th11 | | Lumb/scia |
| JK | 41 | M | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | Th6 | | Lumb/scia |
| CT | 56 | M | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | Th6 | | Anal abscess |
| PL | 16 | F | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | Th5 | | Lumb/scia |
| RK | 69 | F | 1 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | L3 | | Lumb/scia cys |
| PN | 33 | M | 1 | 2 | 2 | 1 | 2 | 1 | 1 | 0 | Th8 | | Lumb/scia |
| EA | 30 | M | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 1 | Th4 | | Lumb/scia |
| IL | 24 | M | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 2 | Th4 | | Lumb/scia |
| SG | 37 | F | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | Th8 | | uretral cal |

**Column code**

A Patient's initials.
B Age at admittance.
C Sex.
D Difficulty voiding urine/Bladder paresis: 1 present, 2 normal micturition, 0 no information.
E Perineal sensitivity: 1 decreased, 2 normal, 0 no information.
F Anal sphincter: 1 weak, 2 normal tone, 3 no information.
G Lasegue's sign. 1 present, 2 absent, 0 no information.
H Achilles tendon jerk: 1 weak or absent, 2 normal, 0 no information.
I Patellar tendon jerk: 1 weak or absent, 2 normal, 0 no information.
J Sensitivity in shank and foot: 1 decreased or absent, 2 normal, 0 no information.
K Paresis of leg or foot: 1 Paresis present, 2 normal, 0 no information.
L Height of contrast column: Th Thoracic, L lumbar vertebra, 0 no information.
M Location of later discovered spinal pathology.
Comments: Lumb/scia Lumbago and/or sciatica, psych psychiatric history, cys cystitis, cal calculus.

agnosis in her case was vasculitis. All 3 patients received suitable treatment and recovered.

Three other patients have residual neurologic symptoms and will be described in more detail below.

A man aged 27 years had pain in the back, difficulties in voiding, and decreased perineal sensitivity. Because the lumbar myelography was normal, he was prescribed analgesics and rest. After 3 days, his condition improved, and he was allowed to return to his home. Three weeks later, he was readmitted with paraplegia. Renewed myelography, now including the thoracic spine, showed that he had a vascular tumor at the level of the 4th to 7th thoracic vertebrae. He was operated on, but he is still paraplegic with bladder paralysis.

A man aged 58 years had pain in the back, bladder paralysis, decreased perineal sensitivity, and decreased anal sphincter tone. Because his symptoms did not regress and no satisfactory explanation could be found for his serious condition, he was referred to a neurosurgical department. There, a new myelographic examination was made, which disclosed a disc hernia between the 6th and 7th thoracic vertebrae. The operation was performed 3 days after the appearance of his symptoms, but his recovery was incomplete. He still has a paralysis of the bladder and a lack of perineal sensitivity.

A woman aged 27 years with a long psychiatric history had difficulties in voiding and decreased perineal sensitivity. Because no definitive diagnosis could be established and she appeared to be bizarre, she was referred to a neurologic department where she was finally diagnosed as having a hysterical condition. At follow-up, her condition had deteriorated; she claims to be paraplegic and to have a bladder paralysis. In spite of her condition, she refuses hospital treatment.

## Discussion

Myelography and therapy in patients with emergency compression of the cauda equina have previously been studied by Laasonen (3). Among 51 patients, they found 5 with an entirely normal myelography. Three of these were operated on, but the exploration was negative. At the follow-up, none of them have any cauda symptoms, but 2 still feel some pain in the legs and back. Except for a lower frequency of negative findings, their results are in agreement with ours.

One of the reasons for our high incidence of negative emergency myelographies (19 out of 51 performed) can probably be attributed to the difficulty in making the diagnosis on the basis of clinical evidence alone. However, considering the grave prognosis, all the patients in whom a cauda compression can be suspected must be judged as victims of that disorder until proved otherwise.

Notwithstanding our limited experience, we would venture the following conclusions and recommendations. The prognosis for patients with signs of compression of the cauda equina is favorable provided the myelography is normal, and surgical exploration is therefore not indicated. However, if severe unexplained symptoms persist and computed tomography of the lumbar spine is normal, myelography of the thoracic spine should be considered; for it is difficult to interpret the diluted contrast column when the thoracic spine is examined after the lumbar myelography.

## References

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