

# Chronic Spinal Hematoma as a Possible Reason for Cognitive Impairment

Helmut Niederhofer, MD, PhD, and Markus Huber, MD

This case report describes a patient with a chronic spinal subdural hematoma and hemosiderosis revealing cognitive deficits. The effects on cerebral function of a chronic subdural hematoma via hemosiderosis are described. © 2003 by Elsevier Inc. All rights reserved.

Niederhofer H, Huber M. Chronic spinal hematoma as a possible reason for cognitive impairment. Pediatr Neurol 2003;28:223-224.

### Introduction

Spontaneous spinal chronic hematomas are extremely rare [1-3] and likely combined with chronic intracranial hematomas [4]. They may cause paraplegia [1,5]. Symptomatology can be reduced by surgical intervention [6,7].

Extremely rarely, chronic spinal subdural hematomes can bleed into the cerebrospinal fluid (CSF) and cause hemosiderosis. Hemosiderosis typically causes slowly progressive ataxia, hypoacusis, and dementia, and sometimes also causes pyramidal signs and sphincter disturbances [3,8-12].

Epidural and subdural spinal hematomas can be diagnosed by magnetic resonance tomography [13].

This case report describes a patient with superficial hemosiderosis of the brain and spinal chronic subdural hematoma, demonstrating impact on psychopathology caused by hemosiderosis because of spinal chronic hematoma. The effects on psychopathology of a chronic subdural hematoma via hemosiderosis are described.

## **Case Report**

A 17-year-old male patient was admitted to our hospital in October 2000 because of vertigo, gait imbalance, and impaired memory functions, as well as dysthymic mood disorder. Symptomatology began in November 1998 with sudden onset of headache and disorientation for few minutes. Gait imbalance was fluctuant but slowly progressive. Additionally, seizures with loss of consciousness and automatisms of the left upper limb, lasting for about 1 minute and remitting under oxcarbazepine medication, were reported. The patient also had cancer of the prostate since 1997, treated conservatively by hormone therapy, and hypacusis (hearing aid since 1997 right, since 1999 left).

A former craniocerebral magnetic resonance image (MRI) (May 1999) revealed superficial brain siderosis, mainly infratentorial. MR-angiography did not demonstrate any pathology. Examination by an otolaryngologist confirmed hypacusis with additional anosmia.

Neurologic examination revealed gait ataxia, anosmia, hypacusis, and slight horizontal nystagmus. Dysthymia and mild cognitive impairment were also described. Lumbar puncture revealed a xanthochromic CSF with pleocytosis ( $21/\mu$ I), siderophages and protein elevation (63mg/dI). Cerebral angiography did not exhibit any relevant abnormality. An ependymoma could be excluded by craniocerebral MRI with gadolinium. No bleeding source could be detected by spinal angiography. The whole examination procedure is summarized in Table 1. Finally, MRI of the whole spine demonstrated a ventrally situated membrane from T1 to T11 (Fig 1). There was no need for neurosurgical intervention. We started medication with trientine hydrochloride.

## Discussion

The rare superficial hemosiderosis results from chronic subarachnoid hemorrhage, although only in 54% of the cases a source of bleeding can be reported [9]. This distinct clinical syndrome is characterized by deafness, cognitive impairment, anosmia, cerebellar ataxia, and pyramidal signs. Chronic subocciptal hematoma as a possible bleeding source is only described once [14]. Uncertainity exists regarding the source of bleeding and mechanism of formation of spinal subdural hematoma. Winters et al. [11] suggest that in many cases a spinal subarachnoidal hemorrhage may be the primary lesion that eventually dissects into the subdural space. The same author reports laceration of a radicular vessel to be a possible additional source for spinal subarachnoidal bleeding.

Spinal MRI and spinal angiography does not inform about the bleeding source, but patient's history with no acute episodes of back pain suggests that chronic spinal hematoma may have been the primary lesion. Hypacusis as the cardinal symptom, with its onset much earlier than the episode of headache and brief disorientation, suggests a slow onset of symptoms.

Communications should be addressed to:

Dr. Niederhofer; Regional Hopital of Bolzano; Paediatria; Via L.-Boehler 5; I-39100, Bolzano, Italy. Received January 16, 2002; accepted September 16, 2002.

From the Regional Hospital Bolzano; Paediatria; I-39100 Bolzano (BZ); Italy.

#### Table 1. Examination procedure

Examination	Diagnosis
Neurologic examination	Hypacusis, anosmia, nystagmus, gait ataxia
Cerebral computed tomography	Enlarged ventricles and subarachnoidal spaces
Evoked potentials	Delayed V-wave, delayed interpeak latencies I-V and III-V right side
Electroencephalography	Theta focus left side frontotemporal
Doppler duplex-sonography	Small plaques arteria carotis interna
Electrocardiogram	Sinus rhythm
Laboratory findings	Hyperlipidemia
Neuropsychology	HAWIE: IQ = 97; Depression status inventory: 61
Cerebral magnetic resonance tomography	Arachnoidal hemosiderosis
Cerebral magnetic resonance angiography	No pathologic results
Eye-nose-throat-examination	Anosmia and hypacusis
Spinal magnetic resonance tomography	Chronic subdural hematoma
Cerebrospinal fluid analysis	Siderophages, xanthochromia
Spinal and cranial/cerebral angiography	No aneurysm

We consider our patient to be an example of an uncommon clinical manifestation of a chronic spinal hematoma with an impact on psychopathology, caused by hemosiderosis.

It indicates the need of neuroimaging of the spine, even in absence of local signs.

#### References

[1] Abla AA, Oh MY. Spinal chronic subdural hematoma. Neurosurg Clin N Am 2000;11:465-71.

[2] Chaves CJ, Bianco E, Shibata MK, de Almeida GM. Chronic subdural hematoma. Surg Neurol 1993;40:435-6.

[3] Roricht S, Grafin von Einsiedel HH. Cerebral and spinal superficial siderosis. Case report. Roentgenpraxis 1994;47:361-3.

[4] Leber KA, Pendl G, Kogler S, Kammerhube F, Ebner F. Simultaneous spinal and intracranial chronic subdural hematoma. Case illustration. J Neurosurg 1997;87:644-7.

[5] Black PM, Zervas NT, Caplan LR, Ramirez LF. Subdural hygroma of the spinal meninges: A case report. Neurosurgery 1978;2: 52-4.

[6] Khosla VK, Kak VK, Mathuriva SN. Chronic spinal subdural hematomas. Report of two cases. J Neurosurg 1985;63:636-9.

[7] Langmayr JJ, Ortler M, Dessl A, Twerdy K, Aichner F, Felber S. Management of spontaneous extramedullary spinal hematomas: Results in eight patients after MRI diagnosis and surgical decompression. J Neurol Neurosurg Psychiatry 1995;59:442-7.

[8] Stillhard G, Bont A, Huber-Gut D. Superficial cerebral hemosiderosis: A rare cause of ataxia or hypoacusis. Schweiz Med Wochenschr 1993;123:1027-32.

[9] **River** Y, Honigman S, Gomori JM, Reches A. Superficial hemosiderosis of the central nervous system. Mov Disord 1994;9:559-62.

[10] Maggioni F, Martinello F, Iavicoli R, Pietrogrande F, Trevisan



Figure 1. Spinal MRI.

CP. Superficial hemosiderosis of the central nervous system. A case report. Acta Neurol 1994;16:134-41.

**[11] Stevens** I, Petersen D, Grodd W, Poremba M, Dichgans J. Superficial siderosis of the central nervous system. A 37-year follow-up of a case and review of the literature. Eur Arch Psychiatry Clin Neurosci 1991;241:57-60.

**[12] Lemmerling** M, De Praeter G, Mollet P, et al. Secondary superficial siderosis of the central nervous system in a patient presenting with sensorineural hearing loss. Neuroradiology 1998;40:312-4.

**[13] Felber** S, Langmaier J, Judmaier W, et al. Magnetic resonance tomography in epidural and subdural spinal hematoma. Radiologe 1994;34:656-61.

**[14] Parnes** SM, Weaver SA. Superficial siderosis of the central nervous system: A neglected cause of sensorineural hearing loss. Otolaryngol Head Neck Surg 1992;107:69-77.