



# Resolution of unilateral upper limb action tremor after surgical treatment of a contralateral frontoparietal arachnoid cyst

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## Abstract

**Purpose** Arachnoid cysts (ACs) are cerebrospinal fluid-filled sacs. Although ACs are a frequent finding on neuroimaging, most remain asymptomatic during lifetime.

**Case report** We report a very rare case of a 62-year-old female patient presenting with a tremor due to a giant arachnoid cyst, which completely resolved after cyst-peritoneal shunting.

**Keywords** Giant arachnoid cyst · Action tremor

Dear editor,

Arachnoid cysts (ACs) are not-uncommon cerebrospinal fluid-filled malformations of the arachnoid mater which can occur all along the cerebrospinal axis due to congenital or, less frequently, acquired mechanisms. Although debated as causes of clinical manifestations [1], when giant in dimensions, they may display a mass effect with variable presentations due to their location: sensorimotor symptoms, headache, dizziness/ataxia, seizures, and nausea/vomiting.

Here, we report an unusual case of tremor due to a giant arachnoid cyst which resolved after cyst-peritoneal shunting.

A 62-year-old left-handed retired woman came to our attention 7 years ago complaining of an inconstant tremor of the left hand associated with numbness and difficulty in gripping small objects. She also reported some episodes of nocturnal right-sided frontal headache. Her neurological examination revealed postural and action tremor and hypokinesia of the left hand and very mild pyramidal signs at the left lower limb. A couple of years earlier, she had presented repeated brief episodes of loss of consciousness for which cardiac and epileptic causes had been ruled out by means of extensive

cardiologic workup and repeated electroencephalograms. A brain MRI scan performed at that time revealed left temporal and right frontoparietal arachnoid cysts, not unremarkable according to the radiologist who had examined the scans (images not available). Furthermore, since childhood, she recalled a clumsy walk (stumbling over any obstacle) and the use of orthopedic footwear.

Since no improvement of the tremor was observed after a low-dose dopaminergic challenge (rotigotine 2 mg), a structural and functional imaging workup was carried out. While the Iodine-123-FP-CIT (DaTSCAN) SPECT was normal, the brain MRI showed a doubling of the right frontoparietal arachnoid cyst (Fig. 1a, c). A cyst-peritoneal shunt with a PROgav valve set at 100 mmH<sub>2</sub>O was then placed. Postoperatively, the patient had one incident focal seizure, but a progressive dramatic improvement of her symptoms and signs until complete resolution in few weeks was observed. The brain MRI scan performed after shunting showed a complete resorption of the cyst (Fig. 1b, d). Seven years after the neurosurgical treatment, her neurological examination was still normal with the exception of mild pyramidal signs at the left lower limb: in particular, she did not show any extrapyramidal signs. A thorough neuropsychological assessment carried out as a completion of the workup showed no alteration of cognitive functions.

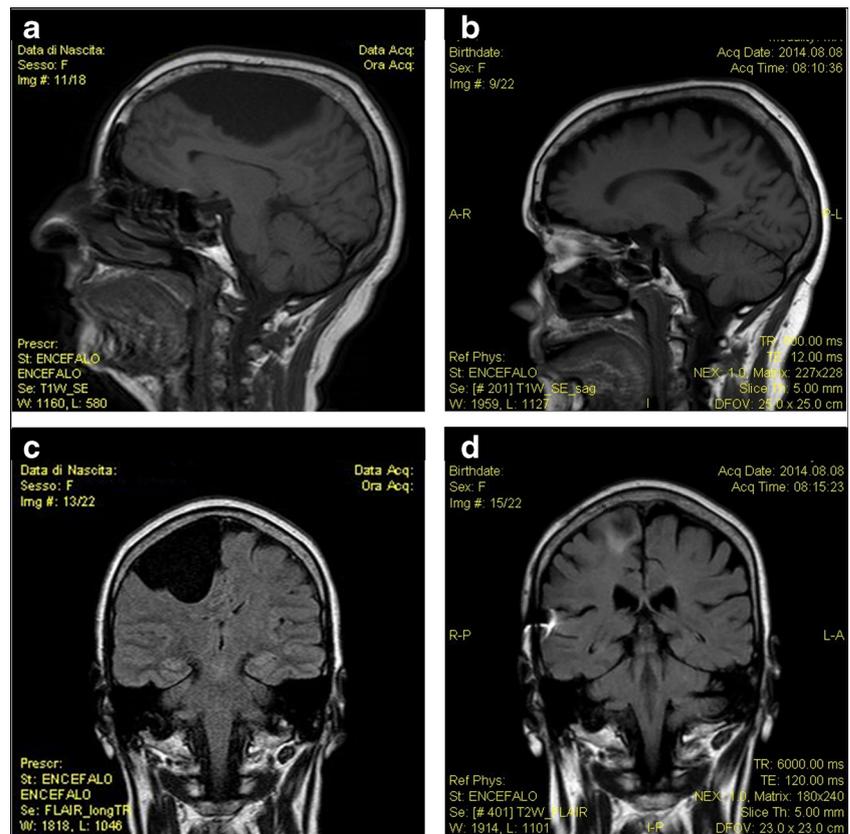
Few reports of unilateral tremor due to posterior fossa arachnoid cyst are available [2, 3]. To our knowledge, only two other cases attesting a secondary tremorigen hemiparkinsonism caused by frontal arachnoid cyst improving after neurosurgical treatment have been reported. In one case, hemiparkinsonism was associated with pyramidal homolateral limb signs [4]; in the second case,

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**Fig. 1** Preoperative and postoperative brain MRI with T1-weighted sagittal image (a, b) and T2-weighted FLAIR coronal image (c, d). After cyst-peritoneal shunting, a noticeable decrease in the cyst volume with disappearance of the mass effect on the right basal ganglia is evident



asymmetrical postural and action tremor and akinesia of the upper limbs along with gait and cognitive slowing was described [5]. Our case is the first report of a complete resolution of a unilateral tremor (probably due to compression on the contralateral basal ganglia) after shunting of a contralateral frontoparietal arachnoid cyst with such a long follow-up. Since no further episodes of unexplained loss of consciousness emerged after the shunting, it is reasonable to attribute also such early manifestations to the mass effect of the giant arachnoid cysts.

This case confirms the importance of neuroimaging to exclude secondary (treatable) parkinsonism, especially when other neurological signs are observed. Moreover, it adds evidence to the heterogeneous symptomatology attributable to giant arachnoid cysts.

### Compliance with ethical standards

**Ethical approval** The authors certify that they comply with the Principles of Ethical Publishing.

**Informed consent** The authors declare that the patient gave her informed consent.

**Conflict of interest** The authors declare that they have no conflicts of interest.

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