Tremor, Incontinence and Altered Mental Status in a Patient With Neurocysticercosis

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Background

- A 51 year-old male with Neurocysticercosis and prior Ventriculorperitoneal shunt (VP) placement presented with bradykinesia, altered mental status, and urinary/bowel incontinence.

Case description

- Our patient presented after he had recently been laid off from his job as a sandwich maker due to an inability to work quickly and an increasing hand tremor. This was seen in conjunction with increasing forgetfulness and new onset incontinence.
- On presentation CT imaging showed marked ventriculomegaly with a cystic lesion seen in the left cerebellopontine angle cistern.
- He underwent a VPS reservoir tap and was started on steroids. With subsequent improvement of his symptoms, he then underwent shunt replacement and was admitted for multi-disciplinary rehabilitation.
- During his acute rehab admission, he had once again developed parkinsonian features, most evident on physical exam and as a regression in therapy milestones.
- Repeat imaging revealed worsening hydrocephalus, leading to shunt reprogramming to allow increased CSF outflow, resulting in rapid improvement of his symptoms.

Discussion

- Our patient developed a secondary parkinsonism due to a structural brain lesion affecting the nigrostriatal circuit.
- Physical factors such as increased ventricular pressure near the upper midbrain and diencephalon may cause shear, torsion, and ischemia of projections to the striatum or direct involvement of the striatum.
- Shunt malfunction may be caused by infection or mechanical failure.
- Approximately 20% of shunts malfunction within the first year after placement, and 5% per year malfunction in subsequent years.
- In patients with VP shunt placement, alterations in physical exam can often predict intra-cranial pathology.
- At 5 weeks post discharge the patient demonstrated a clear mental status, was able to ambulate without an assistive device, negotiate stairs without railings, and achieve lower extremity unilateral standing.
- At subsequent follow-up, the patient had even been rehired at his previous job.

Revision rates

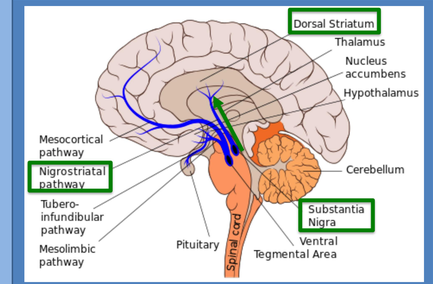
Diagnosis	Total number of procedures	Revisions (%)	No revisions (%)
Tuberculous meningitis	343	83 (24.2)	260 (75.8)
Congenital hydrocephalus	203	56 (27.5)	147 (72.5)
Tumor	324	54 (16.7)	270 (83.3)
Myelomeningocele	107	13 (12.2)	94 (87.8)
Pyogenic meningitis	51	13 (25.4)	38 (74.6)
Intraventricular haemorrhage	46	7 (15.2)	39 (84.8)
Encephalocele	33	6 (18.1)	27 (81.9)
Post-traumatic hydrocephalus	31	12 (38.7)	19 (61.3)
Dandy–Walker malformation	30	11 (36.7)	19 (63.3)
Normal pressure hydrocephalus	10	1 (10)	9 (90)
Neurocysticercosis	7	3 (42.8)	4 (57.2)
Vein of Galen aneurysmal malformation	1	0 (0)	1 (100)
Total	1186	259 (21.8)	926 (79.2)

Conclusions

- Due to relationship of the ventricular system to the nigrostriatal pathway, physical exam and functional status decline can often be reliable indicators of worsening hydrocephalus in patients with VP shunt placement.
- This case also emphasizes that although VP placement is a common neurosurgical procedure; failure rates have been estimated at approximately 11–25% within the first year after shunt placement.
- This reinforces the importance of frequent neurological assessment and prompt intervention by rehabilitation physicians, in coordination with our surgical colleagues, in patients with neurological deterioration and prior VP shunting.

Shunt Malfunction

Nigrostriatal circuit



S/p reprogramming

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