

NEUROLOGIC CASE STUDY

PATIENT PROFILE

Patient: 74-year-old woman experiencing difficulty walking for the past 4 years. Her symptoms were not preceded by medication changes, injuries or illnesses. She does not drink or smoke. Prior to the onset of her gait difficulties, the patient was an avid walker and golfer. Apart from osteoarthritis and medication-treated hypertension, she has been remarkably healthy.

At the onset of this difficulty, the patient noted weakness in her legs. Over time, her gait progressed to a “shuffle.” Despite her walking difficulties, she has denied any falls. Initially the patient brought her complaint to her primary care physician, who ordered a brain CT that showed unremarkable results. She then tried physical therapy for 6 months without significant improvement in her gait. Approximately 2 years ago, she began experiencing urinary incontinence, which has increased in frequency in the past 6 months. At this point she was referred to a neurologist.

During the neurologic evaluation, the patient denied cognitive difficulties, and her examination revealed normal strength, sensation, and deep tendon reflexes. She had mild difficulty standing from a sitting position, and her walking was slow and characterized by difficulty lifting her feet off the floor and turning around.

Diagnosis: The neurologist ordered a brain MRI with cerebrospinal fluid flow studies, which revealed abnormalities consistent with a diagnosis of normal pressure hydrocephalus (NPH). The neurologist arranged for the patient to have a lumbar puncture (under fluoroscopic guidance) and nuclear cisternography. The radiologist was instructed to remove 40 cc of cerebrospinal fluid, after which he would administer a radiolabeled agent (Indium-111 DTP) intrathecally (directly into the spinal fluid). The patient noted improvement in her walking for one day following the lumbar puncture. Over the next two days, she had cisternography done to assess for the presence of the radiolabeled substrate in the ventricles of her brain. 48 hours after the injection, persistent traces of this substrate were present in the lateral ventricles, the abnormalities of which were consistent with a diagnosis of NPH.

TREATMENT

The neurologist discussed NPH treatments with the patient – specifically the benefits and risks of ventriculoperitoneal (VP) shunt. The patient decided to undergo the procedure, wherein a neurosurgeon placed a thin tube into one of the ventricles in her brain via a small hole drilled through the skull. The tube was threaded underneath the skin of her scalp, neck, chest and into the abdomen, where the excess cerebrospinal fluid would drain.

The day after surgery, the patient noted immediate improvement when she walked to the bathroom. The shuffling was completely gone, and over the ensuing week, she also noted a complete absence of urinary incontinence. Upon discharge from the hospital, the patient underwent 6 weeks of outpatient physical therapy. Two months after surgery, she was taking daily walks and had resumed playing golf.



DISCUSSION

Although Parkinson's disease is by far the most common cause of progressive walking difficulties in an older individual (accounting for 70% or more of cases), it is extremely important to consider other potential diagnoses. NPH is often confused with Parkinson's disease. In fact, 10% or more of patients diagnosed with Parkinson's disease may actually have NPH.

As the name suggests, hydrocephalus indicates a swelling of the ventricles (fluid-filled cavities within the brain) due to excessive accumulation of cerebrospinal fluid. NPH is considered an acquired form of this disorder wherein the ventricles may not appear dilated on imaging studies of the brain and the cerebrospinal fluid pressure may be normal.

The classic triad of untreated NPH includes gait difficulties, urinary incontinence and dementia-like symptoms. Typically, the former two abnormalities begin years before the onset of cognitive difficulties. NPH is typically seen in individuals in the seventh decade or later of life. In the majority of cases, the cause of NPH is never determined.

CONCLUSION

It is important to note that not everyone is an appropriate candidate for VP shunt.

Reasons for this include:

- Presence of significant cognitive difficulties. Patients who already exhibit difficulties performing various activities of daily living are likely not going to benefit from VP shunt
- Concomitant medical illnesses, such as cardiac, renal, pulmonary, or hematologic disorders, may preclude consideration for VP shunt.
- The patient and/or family members may be against invasive procedures, particularly in an elderly individual.
- Although the patient experienced a spectacular improvement following VP shunt, this is not typical; 40% or more of patients may experience one or more of the following:
 - Shunt malfunction, involving either the valve or tubing
 - Infection involving the VP shunt tubing
 - Low cerebrospinal fluid headaches
 - Seizures
 - Subdural hematoma
 - Abdominal pain and/or infection (e.g., peritonitis)

For questions or further discussion of the findings in this case study, or to refer a patient to Dr. Mednick, please call (203) 234-1993 or visit www.CTCompNeuro.com.



Since 2003, Dr. Mednick has provided outstanding neurologic care to the people of North Haven and the surrounding area. He is board certified and is the only neurologist in the area with both an MD and PhD, and extensive fellowship training in stroke, emergency neurology and seizure disorders.

Dr. Mednick's expertise enables him to analyze neurologic conditions with great accuracy. The result is a more insightful diagnosis and a highly effective, targeted treatment plan.

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