Normal Pressure Hydrocephalus:

Understanding diagnosis and management in clinical practice

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Definition and Epidemiology

NPH is a neurological disorder with gait disturbance, cognitive impairment, and urinary incontinence, with normal CSF pressure.

Epidemiological Features

NPH mainly affects adults over 60, with prevalence between 0.5% and 2.9% in seniors, often underdiagnosed.

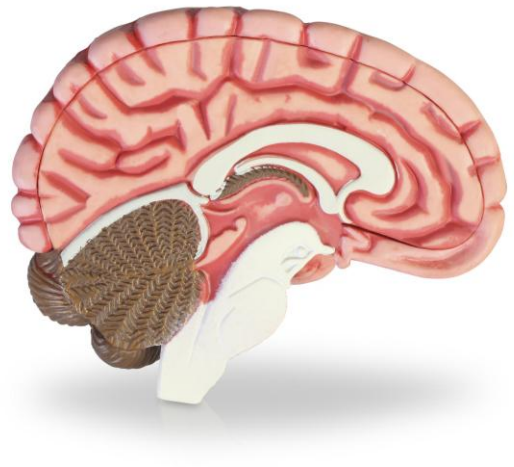
Risk Factors and Diagnosis Challenges

Risk factors include brain injury and infections; diagnosis is difficult due to symptom overlap with other diseases.

Clinical Importance for GPs

Recognizing NPH early allows timely referral, improving outcomes and quality of life for affected patients.

Pathophysiology and Mechanisms



CSF Absorption Impairment

Impaired absorption of cerebrospinal fluid causes gradual ventricular enlargement without increased intracranial pressure.

Neurological Disruption

Chronic CSF accumulation stretches white matter tracts, disrupting motor and cognitive pathways causing symptoms.

Diagnosis

Hakim's Triad

Gait Disturbance

Gait disturbance is the earliest symptom, characterized by a broad-based, magnetic gait where feet appear stuck to the floor.

Cognitive Impairment

Cognitive impairment shows slowed processing, impaired attention, and executive dysfunction, differing from Alzheimer's memory loss.

Urinary Symptoms

Urinary urgency, frequency, and incontinence appear later, significantly affecting quality of life in affected patients.

Diagnostic Importance

Recognizing symptom sequence helps differentiate NPH from Parkinson's and Alzheimer's, avoiding misdiagnosis and aiding early referral.

Diagnosis

- **Imaging**

Characteristic MRI findings include:

DESH pattern- enlarged subarachnoid spaces

Ventriculomegaly

Callosal angle under 90 degrees

Evans ratio above 0.3.

Diagnosis

Blood work to exclude metabolic causes/B12 deficiency

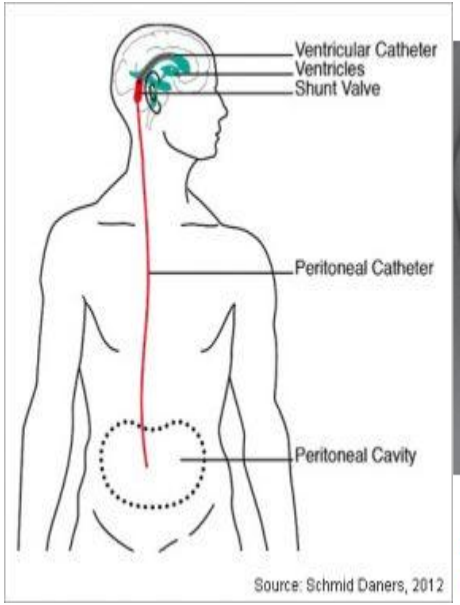
Medication review to rule out drug-induced symptoms.

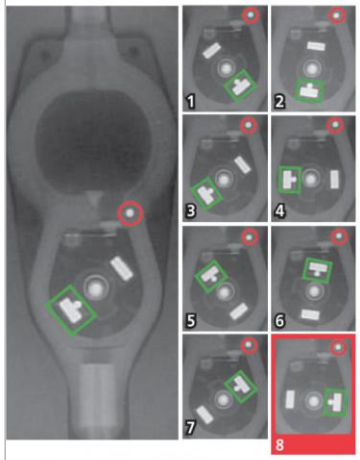
Rule out Parkinson's

High volume Lumbar puncture
Pre and post timed walk
Pre and Post MOCA

Extended lumbar CSF drainage

Management





Right Hand Side X-Ray Marker

Setting Indicator

Treatment Approach

Ventriculoperitoneal shunt surgery restores CSF flow and symptom improvement varies by domain.

Shunt helps distinguish NPH from irreversible degenerative diseases.

Risks and Monitoring

Shunt surgery risks include infection and over-drainage, requiring careful patient monitoring post-operation.

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Prognosis and Key GP Takeaways

Early Detection Responsibilities
GPs identify NPH clinical signs like gait disturbance, cognitive decline, and urinary issues in elderly patients.

Diagnostic Actions
Ordering MRI scans or referring patients for imaging is critical for confirming NPH diagnosis.

Monitoring Post-Treatment
GPs monitor patients after shunt placement for complications and symptom recurrence, coordinating with specialists.

Patient and Caregiver Education
Educating patients and caregivers on NPH, treatment expectations, and follow-up importance is essential.

Thank you

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