Introduction: Normal pressure hydrocephalus (NPH) can be treated by shunting but long-term prognosis is not well known. In addition, the patient selection for shunting is challenging.

Aims: The aim of this study was to evaluate the long-term outcome of presumed NPH.

Methods: Altogether 468 patients were evaluated for presumed NPH by intraventricular ICP monitoring and frontal cortical brain biopsy in the Department of Neurosurgery of Kuopio University Hospital between 1991 and 2006. A total of 236 patients (50%) were subsequently shunted. All patients were followed up to the end of 2008 (n=201) or until death (n=267) with a median follow up time of 4.6 years (range 0-17). Final clinical diagnosis was ensured or readjusted according to the follow-up data. Logistic regression analysis with Cox models was applied.

Results: Clinical dementia was observed in 262 (60%) cases of all patients with adequate data (n=433) until the end of the follow-up. Of the shunted NPH patients 43% were finally demented. Clinical Alzheimer's disease (AD) was observed in 94 (22%) and vascular dementia in 53 (12%), other dementias in 119 (27%) patients.

Conclusions: Progressive dementia is frequently seen even in shunted NPH. Clinical features of dementia during follow-up indicate that NPH is a heterogeneous syndrome and has notable overlapping especially with Alzheimer's disease and vascular dementia.