Comorbidity and Vascular Risk Factors associated with Idiopathic Normal Pressure Hydrocephalus

The INPH-CRasH Study

Hanna Israelsson Larsen

Akademisk avhandling

som med vederbörligt tillstånd av Rektor vid Umeå universitet för avläggande av medicine doktorsexamen framläggs till offentligt försvar i Bergasalen, södra entrén,
Fredagen den 27 maj, kl. 13:00.
Avhandlingen kommer att försvaras på engelska.

Fakultetsopponent: Professor Normal Relkin
Department of Neurology and Neuroscience, Weill Cornell Medical College, New York
Comorbidity and Vascular Risk Factors associated with Idiopathic Normal Pressure Hydrocephalus: The INPH-CRasH Study

Abstract
It has been suggested that the neurosurgically treatable dementia idiopathic normal pressure hydrocephalus (INPH) has similar pathophysiological mechanisms as cerebrovascular disease, but the vascular risk factor (VRF) profile of INPH patients is inadequately known. In addition, the prevalence of depression in INPH patients is unknown and no study has investigated the long-term impact of comorbidity on QoL in shunted INPH patients. The primary objective of this dissertation was to present vascular disease and the VRF profile in INPH. Additional objectives were to assess the prevalence of depression and to investigate quality of life (QoL) in shunted INPH patients.

In the first cohort, the prevalence of possible INPH was assessed through clinical and radiological examinations in 76 patients with a transient ischemic attack (TIA). The second cohort consisted of 176 NPH patients consecutively shunted 2008-2010 in five out of six neurosurgical centres in Sweden. The VRF profile as well as cerebro-cardio and peripheral vascular disease and QoL in the INPH patients were compared with 368 population-based age- and gender-matched controls. Parameters were assessed through questionnaires, clinical examinations, measurements, ECGs and, blood samples. In the first cohort, 4% of the TIA patients had possible INPH. In the second cohort, VRFs as well as cerebrovascular and peripheral vascular disease were overrepresented in the INPH patients. The VRFs independently associated with INPH were: hyperlipidemia, diabetes, obesity and, psychosocial factors. When adding the VRFs that were overrepresented in INPH, although not independently (physical inactivity and hypertension), these six VRFs accounted for 24% of INPH in the population (PAR% 24). Depression was overrepresented in shunted INPH patients and the main predictor for low QoL was a coexisting depression.

In conclusion, the results of the INPH-CRasH study are consistent with a vascular pathophysiological component of INPH and indicate that INPH may be subgroup of vascular dementia. In clinical care and research, a complete risk factor analysis as well as screening for depression and a measurement for quality of life should be included in the work-up of INPH patients. The effect of targeted interventions against modifiable VRFs and anti-depressant treatment in INPH patients should be evaluated.

Keywords
Hydrocephalus, normal pressure; Vascular disease, Vascular risk factors; Elderly, Depression; Case control study; Epidemiology; Dementia; Vascular Dementia; Small vessel disease; Cerebrovascular disease, Transient ischemic attack

Language
English

ISBN
978-91-7601-471-4

ISSN
0346-6612

Number of pages
88 + 4 papers