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Probable NPH in patients with clinical AD: further support for the AD-NPH syndrome and CSF circulatory failure

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Clinical background

To determine the incidence of elevated CSF pressure (CSFP) in patients with a clinical diagnosis of AD. Several studies have documented the coexistence of AD pathology in NPH patients at a rate greater than chance. There has been no corollary study addressing the incidence of NPH among patients with AD. We report elevated CSFP, consistent with NPH, in a small subset of AD patients (AD-NPH) enrolled in an ongoing clinical trial of chronic low-flow CSF drainage, via a novel VP shunt, in AD.

Materials and Methods

Subjects meeting NINDS-ADRDA criteria for probable AD were screened to exclude those with clinical or radiographic signs of NPH before being enrolled in the trial. Opening CSFP was measured during device implantation at a controlled pCO_2 of 40 torr. If mean CSFP were >200 mmH_2O, the subject was excluded from the study due to probable AD-NPH syndrome.

Results

Seven of 210 subjects (3.3%), mean age 66 ± 7 yrs, had CSFP >200 mmH_2O (mean 249 ± 20). AD subjects CSFP was 143 ± 26 mmH_2O, *P* = DISCUSSION: Despite strict exclusion criteria, 3.3% of AD subjects were found also to have NPH by intra-operative CSFP measurements. AD patients had a mean CSFP of 143 ± 26 mmH_2O vs. 249 ± 20 for the AD-NPH group. This is the first set of observations concerning occult NPH in AD subjects, and likely represents an underestimate of the incidence of this "hybrid" condition. We have demonstrated reduced CSF production and turnover in both AD and NPH. Increased resistance to CSF absorption in AD, presumably due to amyloid deposition in the meninges and arachnoid granulations, has now been documented.

Conclusions

We suggest that both AD and NPH are physiologically related to CSF circulatory failure. If the initial dominant change is in CSF production, AD results; if decrease in CSF absorption predominates, NPH develops first. The occurrence of either disease may predispose vulnerable patients to developing the other.