Meningeal fibrosis following subarachnoid hemorrhage (SAH) has been verified histologically in experimental animals and in human autopsy samples, but the clinical course of the intrathecal fibroproliferative reaction is unknown. The authors therefore studied time-related changes in the CSF concentrations of type I (PICP) and type III (PIIINP) procollagen propeptides in patients with recent SAH. METHOD: Fifty-two CSF samples were obtained from 39 patients with SAH treated surgically and eight samples from eight patients with SAH who were not surgically treated. The samples were analyzed for PICP and PIIINP by using radioimmunoassays. RESULTS: The authors found a time-dependent increase in PICP and PIIINP in the CSF of the patients with SAH. Two weeks after the hemorrhage, concentrations were four times higher in patients with SAH than the concentrations in the control subjects. Concentrations in patients with SAH then declined steadily, but remained slightly but significantly elevated even at 10 weeks. PICP and PIIINP did not correlate with the age or sex of the patient or the amount of blood in the initial CT scan. Four patients developed late posthemorrhagic hydrocephalus; their PICP and PIIINP levels were higher than in matched patients with SAH without hydrocephalus. CONCLUSIONS: Time-dependent changes in CSF concentrations of PICP and PIIINP suggest a transient fibroproliferative reaction in the meninges after SAH. The considerable magnitude and extended time course of the changes make the measurement of PICP and PIIINP practicable for the diagnosis of a fibroproliferative state in patients with recent meningeal disease. Furthermore, the results suggest a role for meningeal fibrosis in the development of late posthemorrhagic hydrocephalus [1)].

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Sajanti J, Heikkinen E, Majamaa K. Transient increase in procollagen propeptides in the CSF after subarachnoid hemorrhage. Neurology. 2000 Aug 8;55(3):359-63. PubMed PMID: 10932268.