



The Preinterventional Psychiatric History as a Major Predictor for a Reduced Quality of Life After Treatment of Unruptured Intracranial Aneurysms

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BACKGROUND: A significantly increased rate of positive preinterventional psychiatric histories in the unruptured aneurysm collective was demonstrated previously. The current study was designed to analyze the influence of the preinterventional psychiatric status on the outcome after treatment of unruptured intracranial aneurysms.

METHODS: Patients treated due to meningioma World Health Organization [°]I and unruptured intracranial aneurysms in 2 German neurosurgical centers between 2007 and 2013 were screened for exclusion criteria including malignant/chronic diseases, recurrence of the tumor/aneurysm, and neurologic deficits among others. The preinterventional psychiatric histories and the rates of postinterventional headaches, sleeping disorders, symptoms of chronic fatigue syndrome, and quality of life (QOL) were determined by questionnaires that were mailed to the patients in a printed version.

RESULTS: A total of 58 M patients and 45 iA patients who met the inclusion criteria returned the questionnaires; 10 M (17.2%) and 17 iA patients (37.8%) had a positive psychiatric history. The overall incidental aneurysm collective demonstrated significantly lower overall QOL scores ($P = 0.003$) and significant greater rates of chronic fatigue syndrome ($P = 0.009$) compared with the M collective. After we excluded all patients with positive preinterventional psychiatric histories, those differences

were no longer reproducible. Subjectively, the patients did not realize any significant changes in their QOL after successful aneurysm treatment.

CONCLUSIONS: The results of the current study demonstrate the importance of taking the preinterventional psychiatric history into considerations when evaluating the outcome after unruptured aneurysm treatment. The unfavorable outcome of the aneurysm group seems to be caused by factors that are not related the aneurysm diagnosis or treatment itself.

INTRODUCTION

Approximately one-quarter of all cerebrovascular deaths are caused by subarachnoid aneurysmal hemorrhages (SAHs) (13) with a mortality rate between 35% and 50%, with most patients dying as a result of the initial bleed or its immediate complications (22). More than 40% of survivors experience long-term cognitive and functional limitations (19). Nevertheless, the preventive treatment of incidental aneurysms remains a controversial topic (2, 3, 7, 27). Rinkel et al. (32) identified 23 studies between 1955 and 1996, including 56,304 patients in which the prevalence of unruptured aneurysms varied between 0.4% and 3.6% for retro- and prospective autopsy studies and 3.7% and 6% in retro- and prospective angiography

Key words

- Headaches
- Meningioma
- Quality of life
- Sleeping disorders
- Unruptured cerebral aneurysm

Abbreviations and Acronyms

- BP:** Bodily pain
- CFS:** Chronic fatigue syndrome
- EF:** Emotional role functioning
- GH:** General health
- iA:** Incidental aneurysm
- M:** Meningioma
- MH:** Mental health
- PF:** Physical functioning
- PR:** Physical role functioning
- QOL:** Quality of life

SAH: Subarachnoid aneurysmal hemorrhage

SF: Social role functioning

SF-36: Short Form-36

VT: Vitality

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Citation: *World Neurosurg.* (2015) 84, 5:1215-1222.

<http://dx.doi.org/10.1016/j.wneu.2015.06.047>

Journal homepage: www.WORLDNEUROSURGERY.org

Available online: www.sciencedirect.com

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studies. On the basis of the data from the International Study of Unruptured Intracranial Aneurysms (ISUIA), it has been postulated that treatment of incidental aneurysms of the anterior circulation with a diameter of more than 7 mm should be taken into considerations depending on location, aneurysm morphology, patient age, and general state of health (37).

Most studies evaluating the outcome after such an elective procedure focus on the radiologic outcome, mortality rates, or gross functional outcome (6, 11, 12, 24, 26). Only a few studies evaluated the quality of life (QOL) or the psychological outcome after treatment of incidental intracranial aneurysms (5, 25, 33, 40). The results of those studies remain controversial. Most studies demonstrate a decrease of the QOL during the early stages after such an intervention. Solheim et al. (33) were not able to detect any significant improvement concerning this psychological impairment and reduced QOL in the long term, whereas Yamashiro et al. (40) and Brilstra et al. (5) demonstrated a recovery of the QOL indices during the first year after the intervention with an advantage for endovascular treated patients. A recently published study demonstrated significantly increased rates of pre-interventional psychiatric histories in the unruptured aneurysm collective, an aspect that has not been taken into considerations so far (38).

The current study was therefore designed to analyze the influence of the individual preinterventional psychiatric history on the rate of postinterventional headaches, sleeping disorders, symptoms of a chronic fatigue syndrome (CFS), and reduced QOL indices after treatment of unruptured intracranial aneurysms with benign meningioma patients serving as a control group.

MATERIALS AND METHODS

All patients treated because of a meningioma World Health Organization °I and incidental intracranial aneurysms between 2007 and 2013 in 2 German neurologic centers were screened. The exclusion criteria were: focal neurologic deficits, malignant or chronic neurologic diseases, cardiac or pulmonic diseases that have an influence on daily activities, insufficient linguistic proficiency, subarachnoid hemorrhage in the medical history, a second untreated aneurysm, recurrence of tumor/aneurysm after more than 12 months after the initial treatment or less than 6 months before the study that required another intervention, date of the intervention <6 months before the study, and bereavement of a close relative during the last year. Furthermore, patients were excluded if they experienced a subjectively similar challenging event like the intervention itself during the postsurgical period (e.g., severe car accidents or divorce).

All patients who did not meet any of the exclusion criteria based on the available documents were contacted by phone for another screening interview for exclusion criteria. Patients who met all inclusion criteria and agreed to participate during the screening interview received the questionnaires to evaluate their medical/psychiatric history, the rate of postinterventional headaches, sleeping disorders, symptoms of a CFS, and QOL by mail. Incomplete questionnaires were excluded from further analysis.

Patients who reported preinterventional depressive episodes, anxiety disorders, or psychological supervision were categorized as

patients with a positive preinterventional psychiatric history. A positive history of depression was defined as a depressive mood that persisted for at least 2 weeks in a row and led to intake of antidepressant medication or psychological/psychiatric supervision or by the diagnosis of a depression by a physician in the preinterventional medical history. Headaches were analyzed with the Kieler-Headache-Questionnaire, which differentiates between migraine, chronic, and episodic tension headaches on the basis of the classification and diagnostic criteria for headache disorders, cranial neuralgias, and facial pain of the Headache Classification Committee of the International Headache Society (1988) (1, 15, 16). The rate and degree of sleeping disorders was evaluated by the Pittsburgh Sleep Quality Index (10). Symptoms of a CFS were determined on the basis of the criteria recommended by the International Chronic Fatigue Syndrome Study Group from 1994 (14).

The QOL was quantified by the Short Form 36 (SF-36) questionnaire (20), which is subdivided in eight categories: vitality (VT), physical functioning (PF) (10), bodily pain (BP), general health (GH), physical role functioning (PR), emotional role functioning (ER), social role functioning (SR), and mental health (MH). Additionally, the patients were asked to subjectively rate the change of their QOL after the intervention compared with the last year before the tumor/aneurysm was diagnosed on a Likert Scale from 1 to 5, with 1 standing for a severe decline of QOL and 5 for a strong incline of QOL.

The study was approved by the Regional Ethics Committees according to the principles expressed in the Declaration of Helsinki.

Statistical Analysis

Statistical analysis was done using GraphPad Prism 5 (GraphPad Software Inc., La Jolla, California, USA). Patient characteristics and clinical outcome parameters are given as n (%), mean values ± standard deviation (SD). The rates of postinterventional headaches, sleeping disorders, symptoms of a CFS, and the QOL and the prevalence of psychiatric disorders in the medical history were analyzed by the Mann-Whitney U test and the 2-tailed Fisher exact test. A $P < 0.05$ was considered as significant.

RESULTS

Study Population

A total of 103 of 451 patients treated because of a meningioma (M) and 82 of 164 incidental aneurysm (iA) patients with current addresses available initially met the inclusion criteria based on the available documents of 2 German neurosurgical centers between 2007 and 2013. After the telephone interviews, 75 M patients and 56 iA patients remained who met all inclusion criteria and accepted participation in this study; 58 of the remaining M patients (77.33%) and 45 of the remaining iA patients (80.36%) returned the completed questionnaires that were mailed to the patients in a printed version.

The main exclusion criterion in the M group was the prevalence of comorbidities that had major impact on daily activities and recurrence of the tumor after more than 12 months. The main exclusion criteria in the iA group were SAHs in the medical history and recurrence of the aneurysms after more than 12

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