Clinical Neurology and Neurosurgery 137 (2015) 116–120

Contents lists available at ScienceDirect

Clinical Neurology and Neurosurgery

journal homepage: www.elsevier.com/locate/clineuro

The pre-interventional psychiatric history – An underestimated confounder in benign intracranial lesions studies

H. Wenz[a,1], R. Wenz[a,2], C. Groden[a,3], K. Schmieder[b,4], J. Fontana[b,*]

[a] Department of Neuroradiology, University Medicine Mannheim, Medical Faculty Mannheim of the University of Heidelberg, Theodor-Kutzer-Ufer 1-3, 68161 Mannheim, Germany
[b] Department of Neurosurgery, Ruhr-University Bochum, In der Schornau 23-25, 44892 Bochum, Germany

ARTICLE INFO

Article history:
Received 14 April 2015
Received in revised form 1 June 2015
Accepted 28 June 2015
Available online 2 July 2015

Keywords:
Meningioma
Unruptured aneurysm
Quality of life
Psychiatric history
Post-traumatic stress disorder
Sleep disorders

ABSTRACT

Objectives: The current study was designed to analyze the influence of a positive pre-interventional psychiatric history on the quality of life (QOL) after successful treatment of benign intracranial extra-cerebral lesions.
Methods: Patients treated due to meningioma WHO I or unruptured intracranial aneurysms in two German neurosurgical centers between 2007 and 2013 were screened for exclusion criteria including malignant/chronic diseases, recurrence of the tumor/aneurysm and neurological deficits among others. 131 patients who met the criteria of an objectively unaffected health status were included. The pre-interventional psychiatric histories and the rates of post-interventional headaches, sleeping disorders, symptoms of chronic fatigue syndrome (CFS), post-traumatic stress disorder (PTSD) and QOL were determined by questionnaires which were mailed to the patients.
Results: 103 patients returned the questionnaires. Despite the objectively unaffected health status, the patients with a positive pre-interventional psychiatric history demonstrated a post-interventionally significantly lower QOL ($p = 0.002$), a significantly higher Pittsburgh Sleep Quality Index sum score ($p = 0.009$), as well as significantly higher rates of symptoms of a chronic fatigue syndrome ($p = 0.003$) and PTSD ($p = 0.024$), compared to the patient collective with a negative pre-interventional psychiatric status.
Conclusion: The results of the current study demonstrate the importance of taking the pre-interventional psychiatric history as a significant and independent confounder into consideration when evaluating the outcome after treatment of benign intracranial extra-cerebral lesions. A pre-interventional psychiatric screening and an early psychological intervention might help to improve the overall outcome after successful treatment of such lesions.

1. Introduction

There are several studies available which analyzed the quality of life (QOL) after treatment of benign intracranial extra-cerebral lesions. The impact of such an intervention remains controversial. A recently published study analyzing the psychiatric status after surgical treatment of benign meningioma demonstrated no major impact of the intervention on the rate of depressions and anxiety in the long term [1]. Van der Vossen et al., on the other hand, demonstrated a rate of up to 40% of the analyzed patients who experienced cognitive or emotional problems following surgical procedures due to cerebral meningioma. In this study, depressions or burn-out in a patient's medical history was the most significant factor associated with experienced cognitive complaints in a non-selected study population, including also patients with e.g. incomplete resections and neurological deficits [2]. While most studies which analyzed the outcome after treatment of unruptured aneurysms focused on the radiological and clinical outcome [3–5], only few studies evaluated the quality of life or psychiatric outcome [6–9]. The results of those available studies also remain controversial. Most studies demonstrate a decline of the QOL during the early stages after aneurysm treatment. Solheim et al. were not able to detect any

* Corresponding author at: Department of Neurosurgery, Knappschafts-Krankenhaus Bochum, Ruhr-University Bochum, In der Schornau 23-25, 44892 Bochum, Germany. Tel.: +49 234 299 3601; fax: +49 234 299 3609.
E-mail addresses: holger.wenz@umm.de (H. Wenz), wenz.ralf@gmail.com (R. Wenz), christoph.groden@umm.de (C. Groden), Kirsten.schmieder@kk-bochum.de (K. Schmieder), johann.fontana@kk-bochum.de (J. Fontana).
[1] Tel.: +49 0621 383 2443; fax: +49 0621 383 2165.
[2] Tel.: +49 0621 383 2443; fax: +49 0621 383 2165.
[3] Tel.: +49 0621 383 2443; fax: +49 0621 383 2165.
[4] Tel.: +49 234 299 3601; fax: +49 234 299 3609.

http://dx.doi.org/10.1016/j.clineuro.2015.06.022
0303-8467/

significant improvement concerning this psychiatric impairment and reduced quality of life in the long term [7], while Yamashiro and Brilstra et al. demonstrated a recovery of the QOL indices during the first year after the intervention [6,8] with a vantage for endovascular treated patients [6]. The current study was therefore designed to analyze the isolated impact of positive pre-interventional psychiatric histories on the QOL, sleeping quality, headaches, symptoms of a chronic fatigue syndrome, and the rate post-traumatic stress disorders after successful treatment of meningioma WHO I and unruptured aneurysms in patients with an objectively unaffected health status.

2. Materials/methods

All patients treated due to a meningioma WHO I and incidental intracranial aneurysms between 2007 and 2013 in two German neurological centers were screened. The exclusion criteria were: focal neurological deficits, malignant or chronic neurological diseases, cardiac or pulmonic diseases which have an influence on daily activities, insufficient linguistic proficiency, subarachnoid hemorrhage in previous medical history, a second untreated aneurysm, recurrence of tumor/aneurysm after more than twelve months after the initial treatment or less than six months before the study which 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 post-surgical 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 questionnaires to evaluate their medical/psychiatric history, the rate of post-interventional headaches, sleeping disorders, PTSD, symptoms of a CFS, and QOL by mail. Incomplete questionnaires were excluded from analysis. Patients who reported pre-interventional depressive episodes, anxiety disorders, or psychological supervision were categorized as patients with a positive pre-interventional psychiatric history. A positive history of depression was defined as a depressive mood which persisted for at least two weeks in a row and led to either the intake of anti-depressive medication or psychological/psychiatric supervision or the diagnosis of a depression by a physician during the pre-interventional history. Headaches were analyzed by the Kieler-Headache-Questionnaire which differentiates between migraine, chronic, and episodic tension headaches based on the classification and diagnostic criteria for headache disorders, cranial neuralgias, and facial pain of the Headache Classification Committee of the International Headache Society (1988) [10,11]. The rate and degree of sleeping disorders was evaluated by the Pittsburgh Sleep Quality Index (PSQI) [12]. Symptoms of a CFS were determined based on the criteria recommended by International Chronic Fatigue Syndrome Study Group from 1994 [13]. The QOL was quantified by the Short Form 36 (SF 36) questionnaire [14] which is subdivided in eight categories: vitality (VT), physical functioning (PF), bodily pain (BP), general health (GH), physical role functioning (PR), emotional role functioning (EF), social role functioning (SF), and mental health (MH). The rate of post-traumatic stress disorders (PTSD) was evaluated by the PTSD Check List-Civilian Version (PCL-C), a standardized self-report rating scale for PTSD based on the DSM-IV criteria including 17 items evaluated by 5-point Likert type scales corresponding to key PTSD symptoms [15,16]. The study was approved by the Regional Ethics Committees according to the principles expressed in the Declaration of Helsinki.

3. Statistical analysis

Statistical analysis was done using GraphPad Prism 5 (GraphPad Software Inc., La Jolla, CA, USA). Patient characteristics and clinical outcome parameters are given as n (%), mean values ± standard deviation (SD). The rates of post-interventional headaches, sleeping disorders, symptoms of a CFS, PTSD, and the QOL were analyzed by the Mann–Whitney U-test and the two-tailed Fisher exact test. A p-value <0.05 was considered as significant.

4. Results

4.1. Study population

103 of 451 patients treated due to a meningioma and 82 of 164 incidental aneurysm patients with current addresses available initially met the inclusion criteria based on the available documents of two German neurosurgical centers between 2007 and 2013. 75 meningioma and 56 aneurysm patients remained after the telephone interviews who met all inclusion criteria and accepted participation in this study. 58 of the remaining meningioma patients (77.33%) and 45 of the remaining aneurysm patients (80.36%) returned the completed questionnaires which were mailed to the patients in a printed version. The main exclusion criteria in the meningioma group were the prevalence of comorbidities that had major impact on daily activities and a recurrence of the tumor after more than 12 months. The main exclusion criteria in the aneurysm group were subarachnoid hemorrhages in the past medical history and a recurrence of the aneurysms after more than 12 months. The main reason for not returning the questionnaires was in both groups the time consuming character of the questionnaires. 74% of the M study population and 82% of the iA study population were female. The mean age was significantly higher in the M group (M vs. iA: 62.6 ± 10.9 vs. 55.3 ± 10.8; unpaired t-test: $p = 0.001$). 23 patients of the unruptured aneurysm collective were treated by clipping and 22 by coiling. 27 patients of the study population (26.21%) had a positive psychiatric history (PHx+), while 76 patients (73.79%) denied any kind of pre-interventional psychiatric histories (PHx−). The time periods between the intervention and the participation in the current studies showed no significant differences between those two groups (PHx− vs. PHx+: 3.0 years ± 1.6 vs. 3.4 years ± 1.7, $p = 0.203$, Mann–Whitney U-test) (see Table 1).

4.2. Quality of life

The Mann–Whitney U-test analysis demonstrated significantly lower scores in all sub-scales of the SF 36 in the PHx+ collective (PF: $p = 0.015$, PR: $p = 0.003$, BP: $p = 0.001$, GH: $p = 0.003$, VT: $p = 0.011$, SF: $p = 0.008$, EF: $p = 0.002$, MH: $p = 0.025$, overall sum score: $p = 0.002$) (see Fig. 1). The QOL scores showed no significant differences after subdividing the study population in patients who received the questionnaires after 1–2 ($n = 44$) vs. 3–7 years ($n = 57$) (Mann–Whitney U-test: PF: $p = 0.674$, PR: $p = 0.531$, BP: $p = 0.683$, GH: $p = 0.977$, VT: $p = 0.877$, SF: $p = 0.345$, EF: $p = 0.609$, MH: $p = 0.915$, overall sum score: $p = 0.531$). In each group, one questionnaire was filled out incomplete and therefore excluded from further analysis. Since none of the patients suffered from any neurological deficits or other medical diseases which might explain the reduced QOL in the PHx+ collective, we further analyzed the rate of CSF, headaches, sleeping disorders, and PTSD in both groups (see Table 2).

4.3. Symptoms of chronic fatigue syndrome

Significantly more patients in the PHx+ group ($n = 15$, 48.4%) presented symptoms of a CFS compared to the PHx− group ($n = 16$,