



The neglected need for psychological intervention in patients suffering from incidentally discovered intracranial aneurysms



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ABSTRACT

Objectives: Previous studies demonstrated a conspicuously elevated rate of psychiatric disorders in patients with incidental intracranial aneurysms. This study was designed to analyze the impact of this observation on the post-interventional rates of PTSD, depressions and anxiety disorders in this collective. **Methods:** Physically unaffected iA patients with an unremarkable medical history were included in this two center study. Pre-interventional psychiatric histories, rates of post-interventional depressions, subjective trauma, PTSD, and pre-interventional fears were determined by questionnaires (Beck Depression Inventory (BDI), Impact of Event Scale (IES), civilian Post-traumatic-Stress-Disorder (PTSD) Check List (PCL-C)). Benign meningioma (M) patients served as controls.

Results: 58 M and 45 iA patients were enrolled. Significantly higher rates of PTSD, elevated trauma scores, and moderate/severe depressions (PTSD: $p = 0.0017$; IES: $p = 0.0038$; BDI: $p = 0.0301$) were demonstrated in the iA collective. After excluding patients with a positive pre-interventional psychiatric history those differences were not reproducible. 70% of the iA patients reported an improvement of their unspecific pre-interventional symptoms, while 30% would have rated a psychological consultation as helpful.

Conclusion: The data identifies the early psychological consultation as a relevant and by affected patients accepted treatment modification when trying to improve the outcome after treatment of incidental aneurysms.

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1. Introduction

Every year 500,000 people die due to intracranial aneurysms [1]. Almost 1 in 30 people is threatened by an undetected intracranial aneurysm [2]. Even if an unruptured aneurysm is detected incidentally, deciding to treat is complex. Unfortunately, combined fatality and morbidity risks of up to 5% overshadow the preventive treatment [3]. Moreover, other factors govern the decision-making process, especially the psychological burden. Only few studies evaluated the occurrence of depressions after treatment of incidental intracranial aneurysms (iA); nonetheless there is a trend toward lower quality of life scores in these patients [4–7]. The current study was designed to analyze this issue in more detail. Therefore, we analyzed the correlation between the pre- and post-interventional rates of depressions and anxiety disorders as well as the subjective peri-interventional stress and the willingness of accepting an

optional early psychological consultation in a physically unaffected collective of incidental aneurysm patients.

2. Material and methods

The study was approved by a written consent of the Regional Ethics Committees according to the principles expressed in the Declaration of Helsinki. All patients treated with meningioma WHO¹ and incidental intracranial aneurysms in the two German neurosurgical centers were screened between 2007 and 2013. In a previous analysis we were able to detect a noticeably higher rate of positive pre-interventional psychiatric histories in the aneurysm collective as well as clearly elevated neuroticism scores in the personality traits of the aneurysm collective [8]. In the current study we analyzed the impact of those findings on the prevalence of depressions and post-traumatic stress disorders after successful treatment of unruptured intracranial aneurysms. The rigorous exclusion criteria were: focal neurological deficits, malignant or chronic neurological diseases, cardiac or pulmonic diseases influencing daily activities,

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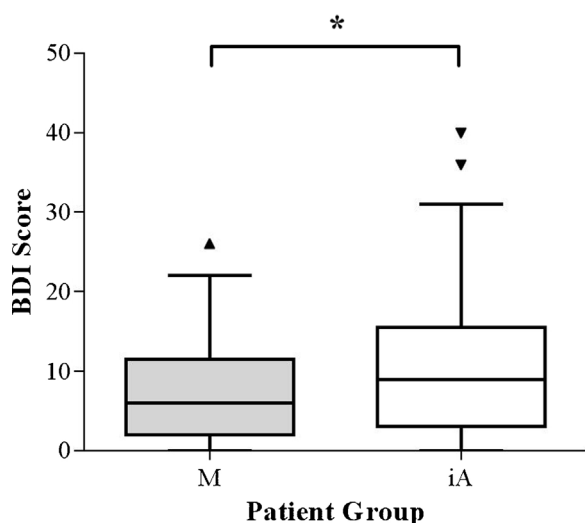


Fig. 1. Beck Depression Index. Boxplots of the sum scores of patients with benign meningioma (M) and incidental aneurysm (iA). * represents p -value of <0.05 .

insufficient linguistic proficiency, SAH in previous medical history, a second untreated aneurysm, recurrence of tumor/aneurysm after more than twelve months after initial treatment or less than six months before the study requiring 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). Patients meeting the inclusion criteria based on the available documents were contacted by phone with all exclusion criteria being re-checked. The remaining patients who accepted to participate received the questionnaires by mail. Incomplete questionnaires were excluded from further analyses. Patients reporting pre-interventional depressive episodes, anxiety disorders or psychological supervision were categorized as patients with a positive pre-interventional psychiatric history. Demographic data like surgical/interventional approach were obtained by retrospective chart review.

2.1. Groups

The study population consists of all patients with an incidental aneurysm (iA, $n = 45$) and all patients with meningioma (M, $n = 58$) serving as controls. A subdivision of patients without a positive pre-interventional psychiatric history were allocated to the iA(-) ($n = 28$) group and the M(-) ($n = 48$) group, respectively.

2.2. Questionnaires

2.2.1. Beck Depression Inventory

BDI-IA is a revision of the Beck Depression Inventory (BDI) and among the most commonly used self-report scales for measuring depression. Severity of depression is graded into: “no depression” (<10), “mild depression” (10–18), “moderate depression” (19–29) and “severe depression” (>30) [9]. The internal consistency for the BDI-IA is good, with a Cronbach’s alpha coefficient of around 0.85 [10].

2.2.2. Impact of event scale (IES)

The IES is a standardized self-report rating scale of current subjective distress, related to a specific event. Created for the study of bereaved individuals, it was soon used for exploring the psycholog-

ical impact of a variety of traumas differentiating between minor, significant and severe traumas. Scoring results above >26 represent a significant trauma [11,12].

2.2.3. PTSD Checklist-Civilian Version (PCL-C)

The PCL-C is a standardized and well established self-report rating scale for PTSD based on DSM-IV (Diagnostic and Statistical Manual of Mental Disorders) criteria. Total possible scores range from 17 to 85. For identifying a PTSD, individual items according to the DSM criteria were utilized [13–15].

2.2.4. Pre- and post-interventional fears

Patients were asked to quantify their pre-interventional fears on a 4-point Likert scale from 1 (no fear) till 4 (extreme fear) in concerns of death, permanent deficits, becoming a nursing case, losing their job, becoming a burden for their family, being afraid of the intervention itself and pain as well as the psychological stress pre-interventional, post-interventional and at discharge. Additionally, patients were asked if they would have considered an early psychological consultation as helpful.

2.2.5. Pre- and post-interventional symptoms

Patients were asked which symptoms were leading to the cranial imaging and if they noticed an improvement or worsening of symptoms after intervention.

2.2.6. Neurosurgical follow-up

The routine follow-up examination sheets of the neurosurgical outpatient clinics were screened for hints on a depression or PTSD.

3. Statistical analysis

Statistical analyses were performed using GraphPad Prism 5 (GraphPad Software Inc., La Jolla, CA, USA). Patient characteristics and clinical outcome parameters, when appropriate, are given as n (%) or mean values and \pm standard deviation. Due to the characteristics of the questionnaire data we applied Mann–Whitney U -test to compare patients’ questionnaire scores. Fisher’s exact test was used to investigate binary data (e.g., “no relevant depression” ($BDI \leq 18$) vs. “significant depression” ($BDI \geq 19$)). The unpaired t -test was used to compare the patients’ age in the iA vs. the M group. A p -value <0.05 was considered as significant.

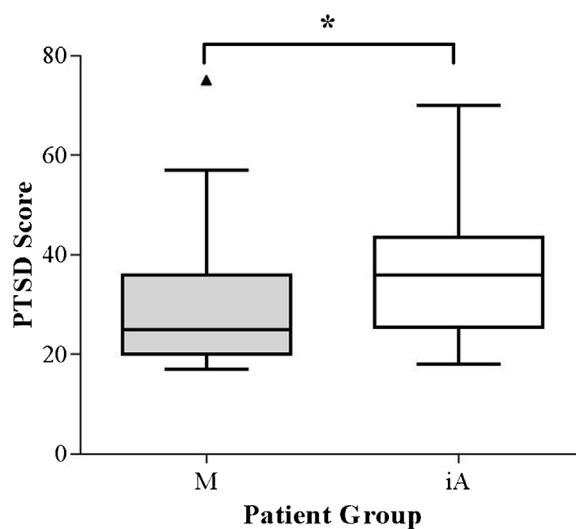


Fig. 2. Impact of Event scores: boxplots of the sum scores of patients with benign meningioma (M) and incidental aneurysm (iA). ** represents p -value of ≤ 0.01 .

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