

Peri-operative quality of life assessment in endoscopically treated patients with pineal region tumours

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Abstract

Background Therapeutic modalities for pineal region tumours are still matter of debate. Endoscopic treatment is a minimally invasive approach. The aim of this study was to assess the quality of life of patients with pineal region tumours who underwent endoscopic procedures.

Materials and methods Eight patients (male:3, female 5) were included in this study. Post-operative evaluation of surgical outcome in terms of quality of life (QoL) was performed using the Quality of Life Questionnaire (QLQ-C30). The patient's outcome scores were compared with normative outcome values of the German population. Pre-operative and post-operative global QoL and symptoms such as headache, visual disturbance, gait disturbance, cognitive function and unconsciousness were documented. Descriptive and explorative statistics were performed.

Results There were no significant differences between the normal German population and the endoscopically treated patients in different health domains and measures of QLQ-C30 (physical functioning 87.5%, emotional functioning 50%, cognitive functioning 50%, social functioning 62.5%;

percentage represents regular functioning). Improved quality of life could be demonstrated in short-term (3–12 months, $n=3$) and long-term (21–29 months, $n=5$) follow-up. Global QoL improved significantly ($p<0.001$; t -test) post-operatively. The following changes between pre-operative and post-operative clinical symptoms were found (headache 87.5%/62.5%, visual disturbance 50%/25%, gait disturbance 87.5%/25%, cognitive functioning 75%/37.5%, unconsciousness 25%/–).

Conclusion Endoscopic treatment of patients with pineal region tumours produces improved post-operative quality of life in all health domains. Therefore, the endoscopic approach should be considered as an alternative treatment in patients with newly diagnosed pineal tumours and/or related hydrocephalus.

Keywords Brain tumour · Endoscopic neurosurgery · Neuroendoscopy · Post-operative outcome assessment · Quality of life

Introduction

Neuroendoscopic interventions are nowadays considered as an alternative treatment for a heterogeneous group of intracranial tumours including pineal region pathologies [7, 9, 11, 16, 23, 27, 30]; however, there is considerable discussion regarding the optimal management of pineal region pathologies [3, 5, 6, 10, 15, 22, 24, 25, 29, 31]. It is not the aim of this paper to discuss the therapeutic approach for different tumour types in the pineal region. In the past few years, the concepts of outcome and quality of life (QoL) have become important measurements in many clinical studies [2, 17]. Quality of life in the post-operative

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Table 1 Clinical characteristic of eight patients who underwent endoscopic intervention for pineal region tumours

Patient	Age (years)	Sex	TS (diameter in mm)	Diagnosis	Follow-up (years)	Surgical approach	Previous shunt	Radiation therapy	Pre-operative status	Current status
1	70	F	20	Astrocytoma	2	Third ventriculostomy	No	No	Hydrocephalus, gait disturbance, double vision	Symptom-free, global QoL from 60 to 100
2	9	F	20	Low grade astrocytoma	4	Third ventriculostomy and tumour biopsy	No	No	Headache, hydrocephalus, loss of concentration	Return to school, global QoL from 45 to 95
3	19	M	28	Germinoma	4	Third ventriculostomy and tumour biopsy	No	Yes	Hydrocephalus, double vision, headache	Double vision, mild headache, global QoL from 20 to 80
4	68	F	40	Low grade astrocytoma	4	Third ventriculostomy and tumour biopsy	Yes	No	Headache, gait disturbance, loss of concentration	Improved symptoms, global QoL from 50 to 80
5	19	F	15	Small lesion at mesencephalon	2	Third ventriculostomy	No	No	Hydrocephalus, gait disturbance, headache	Symptom-free, returned to work, global QoL from 50 to 100
6	42	F	25	Pineoblastoma	2	Third ventriculostomy and tumour biopsy	No	Yes	Hydrocephalus, drop attacks, cognitive impairment	Symptom-free, global QoL from 20 to 75
7	14	M	20	Astrocytoma	3	Third ventriculostomy	No	No	Headache, hydrocephalus, dizziness, visual disturbance	Improved symptoms, global QoL from 20 to 80
8	70	M	10	Pineal region mass	1	Third ventriculostomy	No	No	Drop attacks, headache, gait disturbance, cognitive impairment	Gait disturbance, cognitive disturbance remain, no drop attack, global QoL from 5 to 25

F: female, M: male, mm: millimetre, TS: tumour size.

surgical patients is the result of a complex inter-play between objective health and psychosocial variables [4, 19, 21]. Because there are few studies reporting the quality of life in patients with pineal region tumours [12, 13, 28], this present study aimed to assess the post-operative outcome in terms of QoL using the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire-Core 30 (EORTC QLQ-C30). The QLQ-C30 is composed of both multi-item scales and six single-item measures including five functional scales, three symptom scales and a global health status/QoL scale. A high score in these three multi-scales would represent a healthy level of functioning, high level of symptomatology (problems) and high QoL, respectively [1].

Materials and methods

Patients

Between 1998 and 2003, 8 patients (5 female, 3 male) with symptomatic newly diagnosed pineal region tumours underwent neuroendoscopic procedures in our department. The clinical details are shown on Table 1. Pre-operative and post-operative global quality of life and symptom, i.e. headache, visual disturbance, gait disturbance, cognitive function and unconsciousness were documented. Post-operative evaluation of surgical outcome in terms of QoL was performed using the QLQ-C30 questionnaire. The patient’s outcome scores were analysed and compared with the German population normative values.

The EORTC QLS-C30 questionnaire is a tumour-specific, patient-based instrument designed for self-administration. The cross-cultural validity and psychometric properties are considered appropriate [1, 14, 26]. The questionnaire comprises five functional scales: physical functioning (five questions), role functioning (two questions), emotional functioning (four questions), cognitive functioning (two questions) and social functioning (two questions). There are three symptom scales (fatigue [three questions], nausea and vomiting [two questions] and pain [two questions]) and six single items relating to dyspnoea, insomnia, loss of appetite, constipation, diarrhoea and financial difficulties. It also includes a global health status/QoL scale (two questions). All scales and single-item scores are transformed into a score from 0 to 100.

Statistical analysis

Descriptive and explorative analyses were performed using the SPSS Tersion 11. Differences were analysed using the Student’s *t*-test and chi-square test; *p* values <0.05 were considered significant.

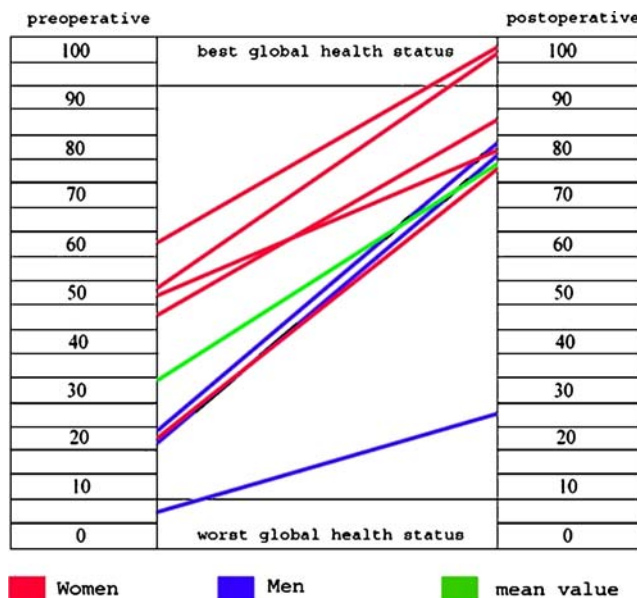


Fig. 1 Global quality of life improves significantly ($p < 0.001$; *t*-test) post-operatively in patients who underwent endoscopic surgery

Results

From our questionnaire analysis, there were no significant differences between the normative values of the German population and the corresponding values of the endoscopically treated patients in terms of health domains and measures of the QLQ-C30 (physical functioning 87.5%, emotional functioning 50%, cognitive functioning 50%, social functioning 62.5%; percentage represents regular functioning). Improved quality of life could be demonstrated in short-term (3–12 months, $n = 3$) and long-term (21–29 months, $n = 5$) follow-up. Global QoL improved significantly ($p < 0.001$; *t*-test) post-operatively (Fig. 1). The following pre-operative clinical symptoms were found (headache 87.5%, visual disturbance 50%, gait disturbance 87.5%, cognitive functioning 75% and unconsciousness 25%). Some of these symptoms remained post-operatively: headache 62.5%, visual disturbance 25%, gait disturbance

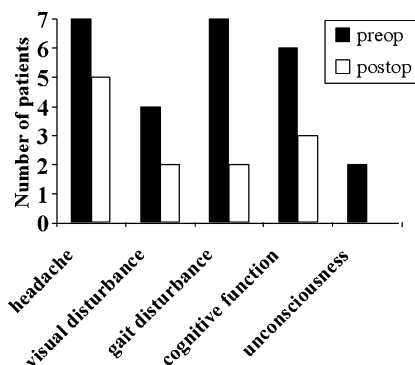


Fig. 2 Pre-operative clinical symptoms are shown in black bars and the remaining post-operative symptoms are shown in open bars

25%, cognitive functioning 37.5% and unconsciousness 0% (Fig. 2).

Discussion

The best management for patients with pineal region tumours remains controversial [6, 10, 15, 22, 24, 29, 31]. The proponents of micro-surgery, endoscopic intervention and radiation therapy claim that their respective technique is appropriate and efficient; the information available to compare the different approaches is largely from individual case series. The outcome assessment are from the doctor's viewpoint (for example survival, complication and recurrence rates) rather than from the patients' perspective. In addition, there are also different initial therapeutic managements in both eastern and western groups of pineal tumour patients. The aim of the present study is not to compare the endoscopic approach with other therapeutic options because the study design to obtain the results of comparative treatments would be difficult and the acquired result may not be applicable for every group of patients (especially for eastern patients who often harbour radiosensitive pineal tumours). However, in addition to the QoL assessment in patients harbouring pineal region tumours who underwent endoscopic procedures, the authors tried to implement a QoL-oriented tumour therapy in neurosurgical practice.

Traditionally, quality of life (QoL) research in medicine has focused on two main issues: the definition of the construct and the development of standardised assessment instruments [18]. The construction of questionnaires has exploited well-established psychometric methods and translation procedures [8]. The results can be seen in numerous questionnaires assessing somatic, psychological and social aspects of patients' well-being and functional capabilities [20]. The goal of a QoL-oriented tumour therapy is to increase the patient's well-being. There have been many attempts to introduce the QoL concept into clinical practice [2, 17]. Consequently, the concept of QoL is starting to be accepted and well-understood in the neurosurgical practice. Therefore, neurosurgeons should be trained to be competent and willing to apply this concept in their clinical practice.

According to the results of this present study, improved QoL could be demonstrated in short-term and long-term follow-up. The post-operative global QoL also improved significantly ($p < 0.001$; t -test) and there was no difference in the health domains between the German population and the patients undergoing an endoscopic procedure. Therefore, neuroendoscopic procedures including tissue biopsy and CSF pathway diversion may be considered as an alternative and effective treatment for patients diagnosed with pineal region tumours when there are good indications for neuroendoscopic intervention.

Conclusions

The authors used established patient assessment methods with the goal of objectively defining the quality of life in patients treated for pineal region pathologies. Post-operative quality of life assessment in patients who underwent endoscopic procedures demonstrated improved QoL in all health domains. Therefore, the endoscopic approach with or without navigation guidance may be an alternative treatment of undiagnosed pineal region lesions and/or related hydrocephalus.

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