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Anum Sadruddin Pidani

Aga Khan University, anum.sadruddin@aku.edu

Aida Mumtaz Rao

Aga Khan University

Muhammad Shahzad Shamim

Aga Khan University, shahzad.shamim@aku.edu

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Depression in adult patients with primary brain tumours: a review of independent risk factors

Anum Sadruddin Pidani, Aaida Mumtaz Rao, Muhammad Shahzad Shamim

Abstract

Depression is considered an under-diagnosed problem, especially in patients with malignancies. Patients with brain tumours in particular, have a relatively higher risk of developing depression, which is multifactorial. Herein, the authors review the recent literature on the prevalence of depression in patients with brain tumours, and explore the various risk factors involved.

Keywords: Brain tumors, Depression, Associated factors.

Introduction

Global data suggests that depression is present in up to 25% of all oncological patients, with higher rates in Asian countries.¹ In Pakistan, up to 52% of patients with malignancies may have some form of depression.² Primary brain tumours are ranked highest among malignancies that lead to emotional and psychological impact on patients.³ Diagnosing depression in brain tumour patients is relatively a challenging task as it is difficult to differentiate the actual cause of depression in these patients. Apparently, most symptoms of depression may be a consequence of involvement of white matter tracts, which can potentially lead to criterion contamination for the diagnosis of secondary depression.⁴

Review of Literature

It is estimated that 15% to 40% of all brain tumour patients suffer from depression, with highest rates among those with glioma.⁵ A systematic review based on 42 observational studies with 25 distinct self-reported diagnostic tools (scales) reported the prevalence of depression in glioma patients may range from 0 to 93% with a median prevalence of 27%.⁶ Another prospective cohort study with the largest sample size to date (n=155) reported that 20% of all glioma patients become clinically depressed within 8 months of diagnosis.⁷

The various factors related to depression in these patients

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Aga Khan University Hospital, Karachi, Pakistan.

Correspondence: Muhammad Shahzad Shamim.

Email: shahzad.shamim@aku.edu

are reviewed below:

Age: Other than one cohort study that reported younger patients to be at higher risk of developing depression, no other study has supported this notion.⁸ Here, we must mention that this review does not include paediatric patients.

Gender: Five studies report a positive association between depression and female sex, especially those concerning low-grade tumours (I and II). However, 10 studies report no such association, especially the studies which have included high-grade (III and IV) tumours.

Marital status: Although marital status was not found to be statistically significant as a factor related to depression, the trends showed greater prevalence of depression among unmarried and widowed patients.⁹

Past psychiatric history: Two studies report past psychiatric history to be positively associated with depression in the course of illness, especially when expected survival is short. However, two other studies reported no such association.¹⁰ Here we must mention that literature suggests that relapse of depression and other psychiatric disorders can occur with extreme life events and it is understandable that patients diagnosed with primary brain tumour often end up in relapse.

Functional status: Functional class is one of the most important precursor of depression among primary brain tumour patients.⁷ Individuals who scored below 70 at KPS scale indicating low functionality (class III & IV) have consistently scored higher in self-evaluating depression scale.⁸

Education level: Studies report that individuals with college level education are less likely to develop depression than those with lower educational level.⁹

Occupation: Occupation is an important socio-economic determinant which may have a role in depression among primary brain tumour patients.⁹ Three studies out of 42 reported role of employment in the development of depression out of which one showed positive association.

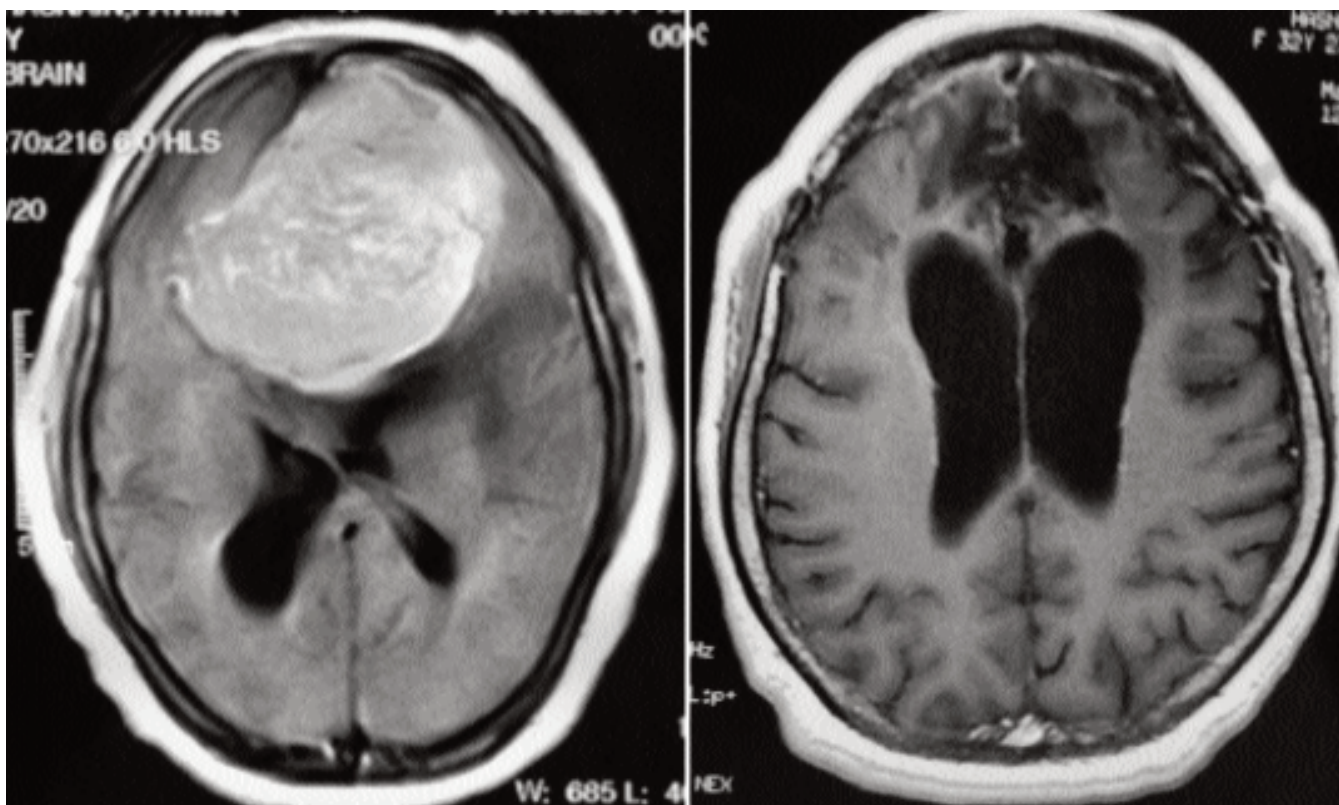


Figure (a,b): Pre and post operative MRI brain with contrast, axial sections, showing complete excision of a large frontal meningioma that was diagnosed due to symptoms of depression.

Tumour grade: In most studies, tumour grade was not associated with depression. Patients with all grades had similar risk for depressive symptoms. However, a study conducted by Arnold and associates reported low prevalence of depression in grade I tumour compared to other grades (II, III, and IV).

Tumour location: Five studies found no association between location of tumour and depression, although one study reported frontal lobe as a tumour location that is an independent indicator of depression.⁶ Another study reported the association of left hemispheric tumour and depression, especially in female patients.¹⁰

Timing from Surgery: Two studies reported decreasing trends in depression level, three months from the first surgery, although other studies with longitudinal follow up (1 to 6 years) reported increase in levels of depression as the duration of disease increases.⁸ Overall, studies suggest that depression levels tend to fluctuate over time and the trend remains inconsistent.

Anti-epileptic drugs and steroids: Antiepileptic drugs have been shown to have a direct association with

depression in patients with primary brain tumour.¹¹ Use of steroids is also reported to be associated in mediating depressive symptoms among primary brain tumour patients.¹²

Chemotherapy: Higher levels of depression have been reported in female patients during chemotherapy.¹³ Side effects of chemotherapy such as alopecia and skin related changes may be the reason for this association.

Cost: The reviewers did not find any studies that analyzed the cost of care as a factor associated with depression. This may not be a major problem in higher income countries, where healthcare is not usually out-of-pocket, but for developing countries like Pakistan, this remains an important area of research.

Conclusion

Depression among patients with primary brain tumour is common, although in most cases it may be treatable. Early diagnosis is critical. Identification of high risk patients can enable health care providers to screen such patients earlier and more frequently. There is a need to conduct further researches to identify more factors that

could be associated with depression among patients with primary brain tumours.

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