ISSN 1220-8841 (Print)
ISSN 2344-4959 (Online)

ROMANIAN
NEUROSURGERY

Vol. XXXIV | No. 1 March 2020

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DOI: 10.33962/roneuro-2020-018

Romanian Neurosurgery (2020) XXXIV (1): pp. 127-132
DOI: 10.33962/roneuro-2020-018
www.journals.lapub.co.uk/index.php/roneurosurgery

Fast growing recurrent grade I meningioma. A rare case report

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Keywords
grade I meningioma,
recurrence,
fast-growing

ABSTRACT

Meningiomas are mostly regarded as benign tumours, accounting for 13% to 26% of all primary intracranial tumors1. According to 2016 World Health Organization (WHO) classification, meningiomas are classified into grade I (benign), II (atypical), and III (anaplastic).2 Meningioma are neoplasms derived from arachnoidal (meningothelial) cells. These lesions can occur in people of any age but commonly present in middle age. Women are more likely to develop a meningioma, with a female/male ratio of approximately 2:1 intracranially and 10:1 in the spine.3 Even after complete removal, meningiomas have been estimated to recur in 10 to 32% of the cases within 10 years. However, recurrences in grade 1 meningiomas are rare and occur after long duration.4 We herein report a case of grade 1 meningioma that recurs very fast, within the duration of 1 yr and the recurrent size of the tumor was approx three times the size of the primary one. To our knowledge, very few cases in the literature have been reported with such a fast-growing grade 1 meningioma.

CASE REPORT

A 45 years female, case of right cavernous sinus meningioma (figure 1,2) operated 1 year back, was admitted to our department of neurosurgery with altered sensorium for last 20 days. Simpson grade III excision of the tumor was done 1 year back. The histopathology report of first surgery was transitional meningioma grade 1 with MIB index 10-12%. After the first surgery post-operative scan (figure 3) reveals gross total excision of tumor and patient went back with no deficits. Now after 1 year patient present to us in altered sensorium, right lower motor neuron paresis of facial nerve and paresis of lower cranial nerves over the right side. MRI Brain plain with contrast was done which reveals a large recurrent mass lesion extending from right

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ISSN online 2344-4959
© Romanian Society of Neurosurgery

First published
March 2020 by
London Academic Publishing
www.lapub.co.uk

cavernous sinus to ipsilateral cerebellopontine angle attaching to the petrous bone with gross hydrocephalus (figure 4,5). As the patient presented in altered sensorium, patient was intubated, put on ventilator and emergency ventriculoperitoneal shunt was done. Subsequently right retromastoid suboccipital craniotomy and tumor decompression was done and a part of tumor inside the cavernous sinus was left behind (figure 6). Histopatholgy report again came out to be transitional meningioma. Post operatively patient continued on ventilator, tracheostomised and after few days gradually weaned from tracheostomy. At the time of discharge, patient was conscious, oriented, following commands and walking with support.

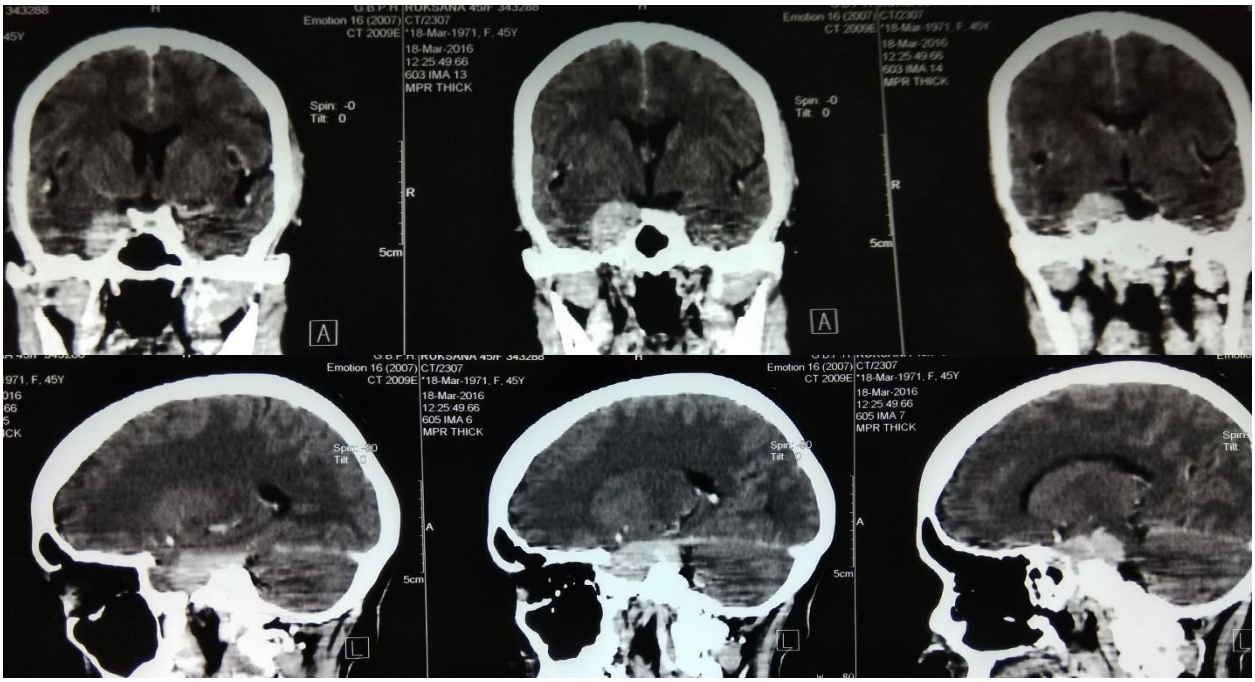
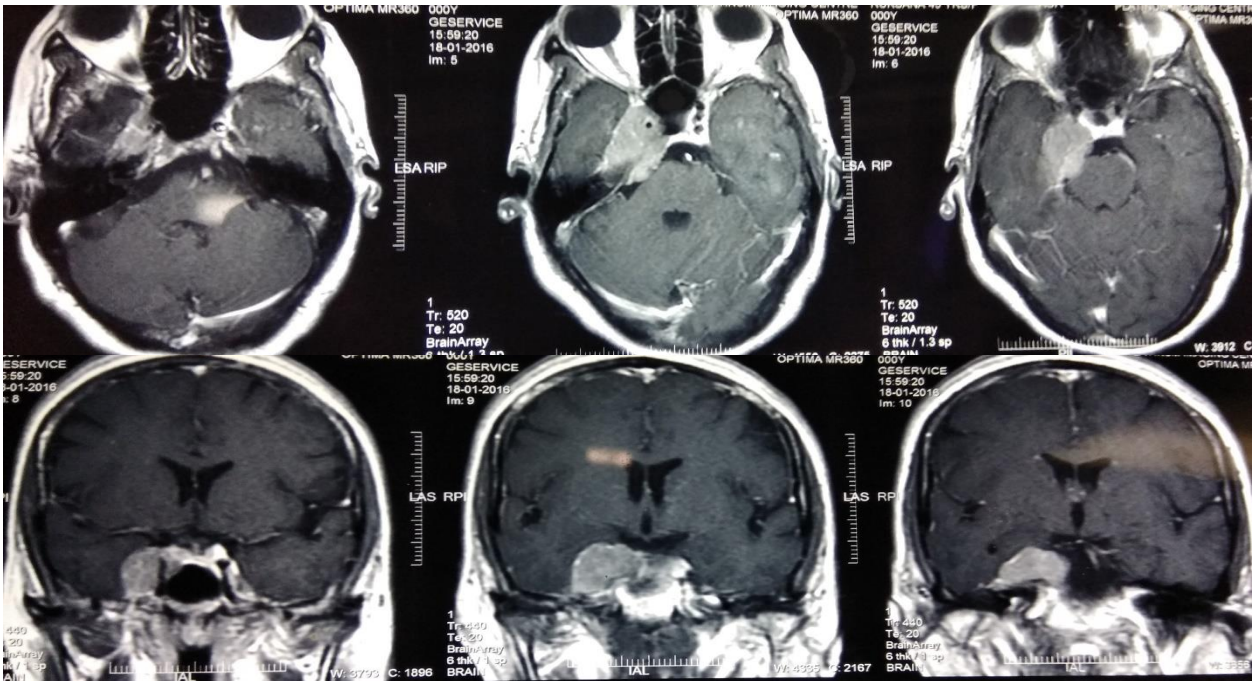


Figure 1. Contrast CT scan (coronal and saggital images) of patient done preoperatively 1 yr back, showing homogenously contrast enhancing lesion in right cavernous sinus.



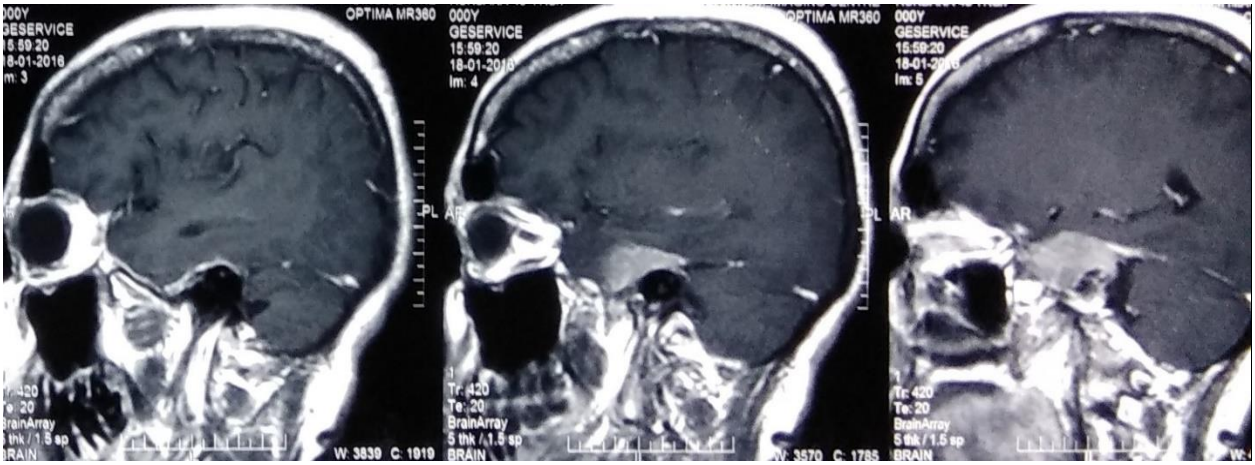


Figure 2. MRI Brain (axial, coronal and saggital images) of patient done preoperatively 1 yr back, showing homogenously contrast enhancing lesion in right cavernous sinus.

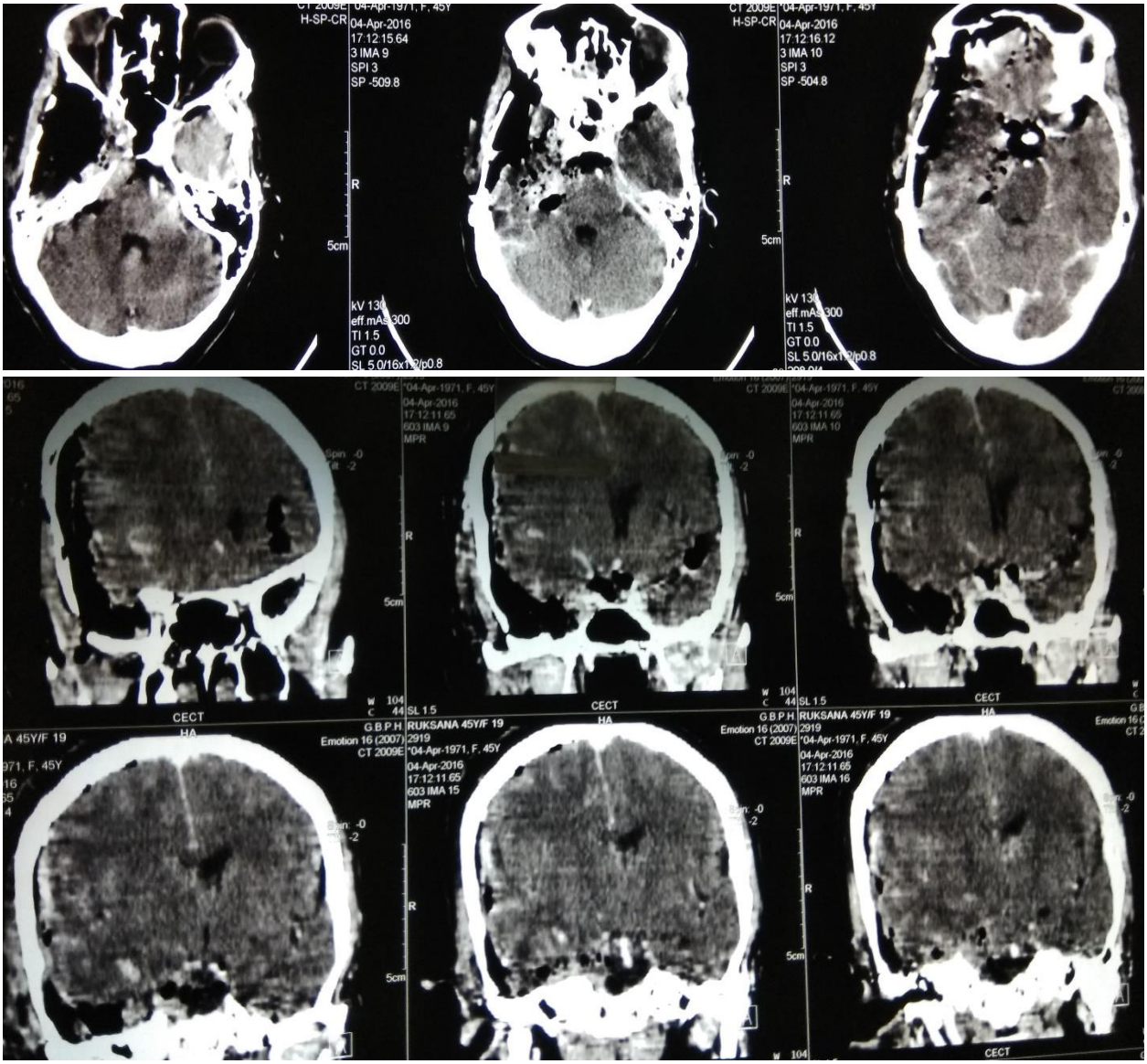


Figure 3. Contrast CT (axial and coronal) post-operative images of the patient done 1 year back, showing gross total resection of meningioma.

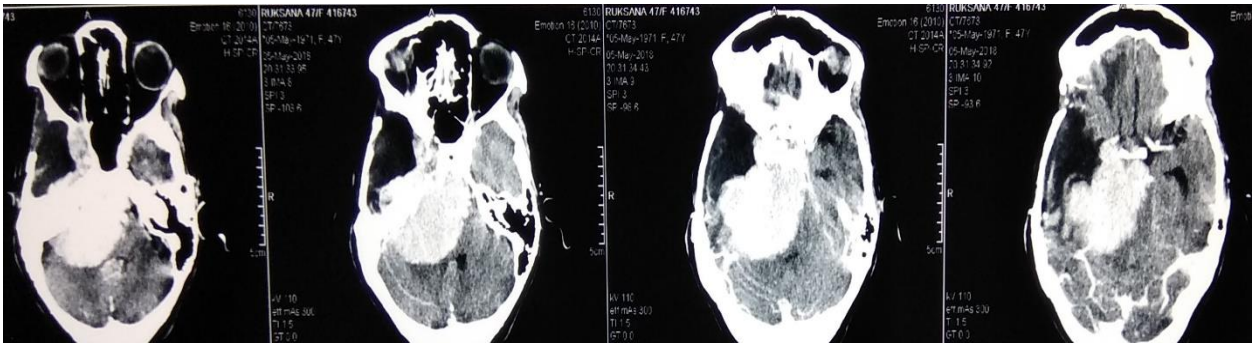


Figure 4. Contrast CT axial images showing brilliantly homogenous contrast enhancing lesion in cavernous sinus with extension to the right cerebellopontine angle.

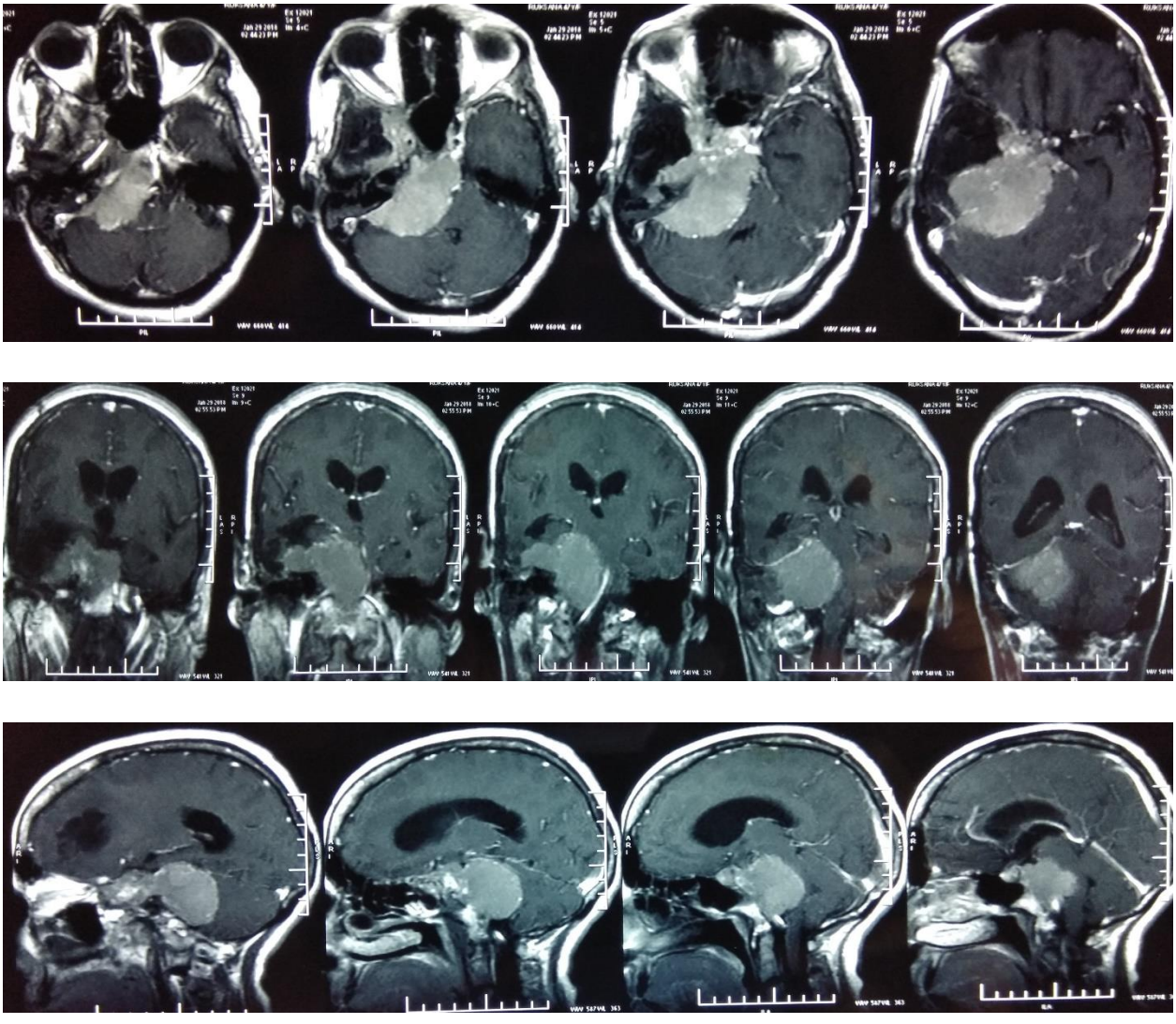


Figure 5. MRI Brain contrast images showing brilliantly homogenous contrast enhancing lesion in cavernous sinus with extension to the right cerebellopontine angle.

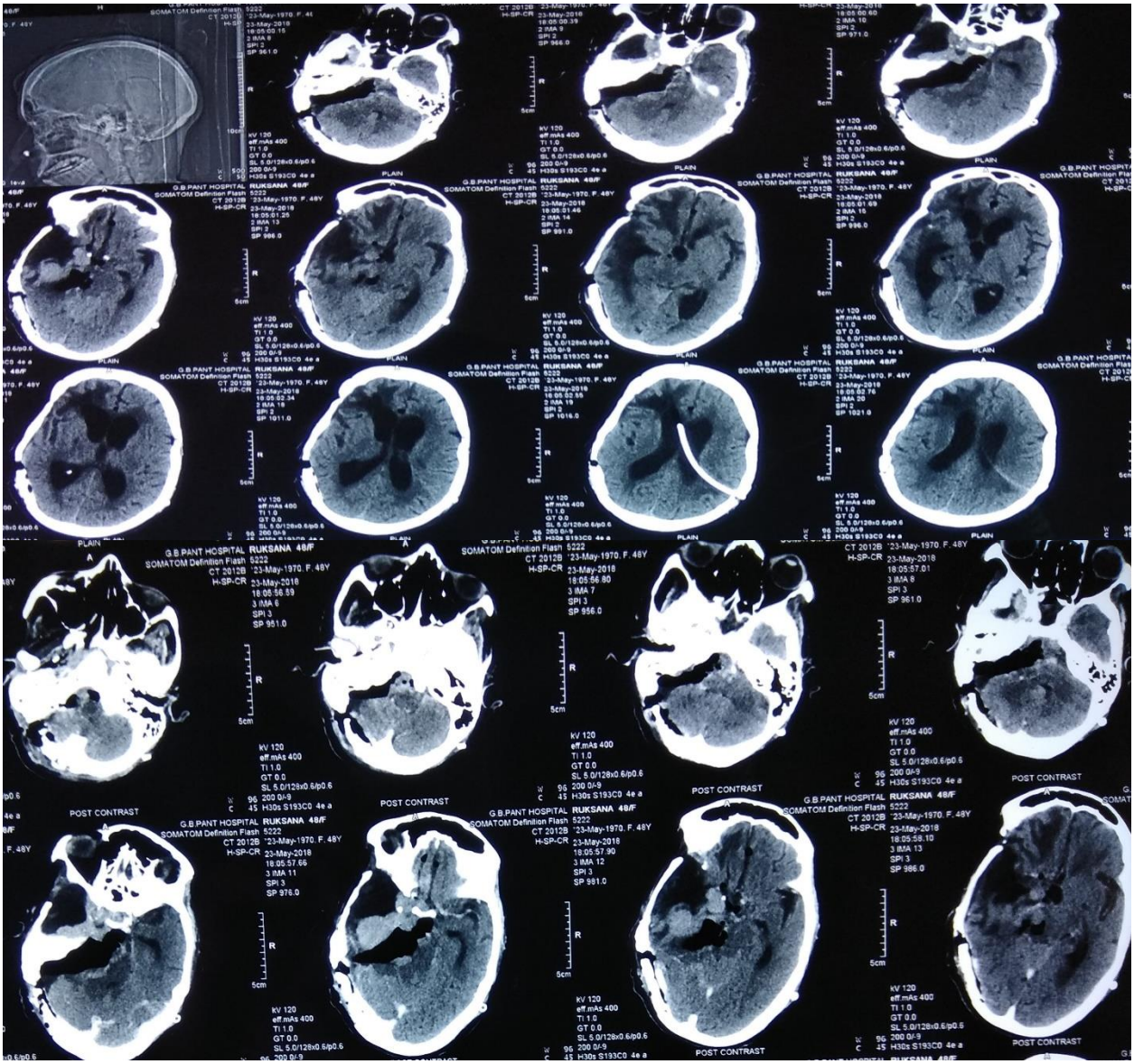


Figure 6. CT brain palin and contrast post-operative images showing total removal of meningioma in C P angle with residual tumor in cavernous sinus with vp shunt in situ.

Discussion

Recurrences in grade 1 meningioma are rare and occur after long duration. In our case patient had recurrent grade I meningioma and that too in just 1 year and now tumor has grown to such a big size that it had extended to right cerebelloopontine angle displacing the midbrain causing mass effect and hydrocephalus. To date very few cases has been reported in literature where the grade 1 meningioma recurs in such a short interval and of such a big size. Recurrences in grade 2 and grade 3 are common.

In the study by Gallagher[5], the median time to recurrence /progression was 60 months (range 6 to 134 months) and another study done by Ildan[4], the mean time to recurrence was 60.5 ± 27.9 months (range, 28 to 114 months) for benign meningiomas and 39 ± 14.5 months (range, 28 to 68 mos) for malignant meningiomas. Despite complete total resection, 7-20% of benign (Grade I), 29-40% of atypical (Grade II), 50-78% of anaplastic (Grade III) meningiomas recur.[6]

The factors involved in tumor recurrence, other than tumor grading are extent of surgery, age, gender, location and brain invasion. Meningiomas in males and children tend to be aggressive and recur more than in females[7,8]. However, Ildan et al[4], and

Adegbite et al[9] reported that age and gender has no influence on proliferative activity. Location was one of the factors implicated in recurrence. Meningiomas of the skull base and tumors close to major sinuses were reported to have a high proliferative index and were associated with recurrence[4,8,12]. Bitzer et al[10] and Ide et al[11] reported that large tumors were more prone for recurrence than smaller tumors, as large sized tumors were associated with a higher incidence of tumor infiltration and adherence to arachnoid membrane and the adjacent brain tissue. Nakasu et al[12] found that lobulated tumors recurred more often than round tumors.

Gallagher et al reported that 5-year recurrence / progression free survival (RPFS) for Simpson grade 1 was 96.8%, 2: 100%, 4: 82.4% and 5: 0%. Simpson grade and gross total/subtotal resection were significant predictors of recurrence with most of the recurrences occurring in the subtotal resection group and only a few occurring in patients who underwent total removal.

The overall mortality among recurrent meningiomas was 9.7%, and recurrence-related mortality constituted 75% of all meningioma related mortalities in the series by Guarnaschelli et al[2].

Conclusion

Recurrence in grade 1 meningioma is rare. Recurrence is common with subtotal resection of meningiomas. The predicting factors for recurrence in this case were subtotal resection, primay tumor location (cavernous sinus) with high MIB index. A regular radiological follow up should be done in these patients, so that recurrence could be identified at an early period without causing more impact on patient's general condition.

References

1. Liu Y, Song DP, Wang T. Meningiomas with different histological grade in the same patient: Case report. Medicine (Baltimore). 2017;96(50):e9086.
2. Guarnaschelli JJ, Stawicki SP. Brief communication: Recurrent brain meningiomas. OPUS 12 Scientist 2008;2(2):32-34.
3. Commins, D. L., Atkinson, R. D., & Burnett, M. E. (2007). Review of meningioma histopathology, Neurosurgical Focus FOC, 23(4), E3.
4. Ildan F, Erman T, Göçer AI, et al. Predicting the probability of meningioma recurrence in the preoperative and early postoperative period: a multivariate analysis in the midterm follow-up. Skull Base. 2007;17(3):157-71.
5. Gallagher MathewJ, Jenkinson Michael D, Brodbelt Andrew R, Mills Samantha J, Chavredakis Emmanuel. WHO Grade 1 meningioma recurrence: Are location and Simpson grade still relevant?. Clinical Neurology and Neurosurgery http://dx.doi.org/10.1016/j.clineuro.2016.01.006
6. Babu S, Uppin SG, Uppin MS, Panigrahi MK, Saradhi V, Bhattacharjee S, Sahu B P, Purohit A K, Challa S. Meningiomas: Correlation of Ki67 with histological grade. Neurol India 2011;59:204-7
7. Darlix A, Zouaoui S, Rigau V , et al. Epidemiology for primary brain tumors: a nationwide population-based study. J Neurooncol 2017;131:525–46.
8. Kasuya H, Kubo O, Tanaka M, Amano K, Kato K, Hori T. Clinical and radiological features related to the growth potential of meningioma. Neurosurg Rev 2006;29:293-7.
9. Adegbite A B, Khan M I, Paine K WE, Tan L K. The recurrence of intracranial meningiomas after surgical treatment. J Neurosurg. 1983;58:51–56.
10. Bitzer M, Wöckel L, Morgalla M, et al. Peritumoral brain edema in intracranial meningiomas: influence of tumor size, location and histology. Acta Neurochir (Wien) 1997;139:1136–1142.
11. Ide M, Jimbo M, Kubo O, Yamamoto M, Takeyama E, Imanaga H. Peritumoral brain edema and cortical damage by meningioma. Acta Neurochir Suppl (Wien) 1994;60:369–372.
12. Nakasu S, Nakasu Y , Nakajima M. Potential doubling time and tumor doubling time in meningiomas and neurinomas. Acta Neurochir (Wien) 1996;138:763–770.