

Post Traumatic Glioma – An association questioned

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Abstract: Post traumatic glioma has been a matter of debate. Few reports favor its occurrence in previous head injury scar, subsequently developing into glioma. Here we report a case of young patient presented with headache, seizures and gradual loss of vision. On investigation found to have brain tumor. Patient had head injury occurred 3 yrs back. It fulfills all the criteria required to establish traumatic origin, further supporting the association.

Key words: Post traumatic glioma, Brain tumor, Head injury

Introduction

CNS tumors occur due to various reasons, however causal association to previous head trauma has been questioned. Recently many authors have reported occurrence of gliomas in scar of old brain injury patients [1,2]. Here we are reporting one case of post traumatic glioma meeting all criteria, further supporting the association.

Case

A 35 yrs old young healthy male patient presented neurosurgery OPD with complaints of headache for 3 yrs, generalized seizures for 2 yrs, vomiting and gradual vision loss for 1 year. Patient had history of RTA with head injury 3 yrs back, loss of consciousness was present, for which he was hospitalized. At the time of admission patient was conscious,

oriented and bilateral pupils reacting to light. Vision was 12/6 in right eye and 9/6 in left eye with bilateral papilloedema present. Left sided hemiparesis was found with muscle power 3/5.

Treatment

Patient was initially put on iv mannitol, steroid and anticonvulsant measures. CT head showed space occupying lesion involving right frontal lobe extending anteriomedially with surrounding edema and compression of anterior horn of lateral ventricle. There was a small area anteriolateral to SOL suggestive of previous scar with glioma (Figure 1). MRI head revealed ill defined, complex soft tissue mass lesion showing cystic as well as solid component within right frontal lobe cortical and subcortical region with few hyperintense areas on T1 images. There was a thin layer of gliosis seen in anterior basal part of mass, along with diffuse cerebral edema (Figure 2).



Figure 1 - CT head showing space occupying lesion involving right frontal region head with adjacent scar

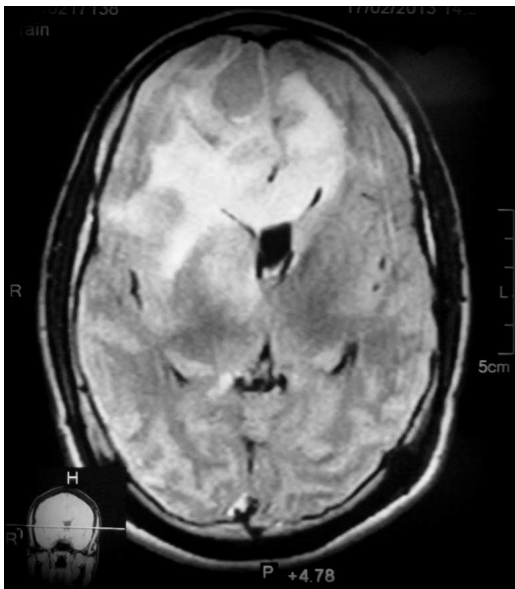


Figure 2 - MRI head showing mass occupying right frontal lobe with solid and cystic component and a layer of gliosis over anterior basal part representing an old scar

Right frontal craniotomy was done. Tumor was found in frontal area, grayish in color, moderately vascular and soft suckable in consistency. Excision of tumor was done.

Follow up

Postoperatively, mannitol, anticonvulsant and steroids were continued for 10 days and patient made quick recovery with vision started improving 4th day onwards and hemiparesis resolved gradually. Headache and vomiting were also subsided. Biopsy revealed diffuse fibrillary astrocytoma. Patient referred to radiotherapy dept for further treatment. At 6 months of follow up, patient was doing well.

Discussion

The relationship between the glioma and head injury has been debated for years. Though there are few cases reported in literature which showed the association of development of glioma following head trauma. Zulch described the following criteria for the acceptance of a causal relationship between trauma and the onset of cerebral tumors [3]:

1. The patient must have been in good health before suffering the head injury.
2. The blow must be severe enough to cause brain contusion and a secondary reparative process.
3. The location of the impact and the tumor should correspond exactly one to the other.
4. There should be a time interval between trauma and the appearance of the tumor of at least 1 year, a longer latent period increasing the likelihood of a causal relationship.
5. The presence of the tumor must be proved histologically.
6. Trauma should consist of an external force.

Manuelidis in 1972 added three more criteria [4]:

1. The traumatized brain must also be proved histologically.

2. Bleeding, scars and edema secondary to the presence of the tumor must be clearly differentiated from that caused by trauma.

3. Tumor tissue should be in direct continuity with the traumatic scar, not merely in its vicinity or separated by a narrow zone of healthy or slightly altered brain tissue.

The recent reports showed the CT scans at the time of the trauma demonstrating significant injury and the follow-up scans demonstrating tumor at the same site [5]. With the routine use of CT and MRI, some of the pathologic criteria can be replaced or supplemented by imaging criteria. CT/MRI, which elegantly reveal the severity and location of the traumatic brain injury and the subsequent formation of a neoplasm at the same site, can provide convincing evidence for the traumatic causation of a brain tumor [6].

Pathogenesis of post-traumatic glioma is still obscure. Regenerative and scarring processes following trauma have been thought play some role to stimulate neoplastic transformation. Tumor should arise from old trauma scar for a causal relationship to establish [7]. If the tumor arises at different site of the old lesion, should be coincidence [8]. However prospective studies following head injury failed to establish a direct association.

Conclusion

- An association between head trauma and brain tumor cannot be ruled out.
- Brain tumor can occur several years after head injury at the site of previous scar.

- For accurate diagnosis, Zulch's and Manuelidis criteria should meet along with space occupying lesion in CT or MRI near old scar.
- Treatment requires surgical excision along with anticonvulsant and antiedema measures.
- In a follow up case of head injury with additional neurological symptoms, possibility of tumor should be kept in mind.

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