

Post-traumatic meningioma: three case reports of this rare condition and a review of the literature

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In this issue, Francois et al. describe three cases of intracranial meningioma diagnosed after 15/15/3 years at the site of a previous skull/dural trauma. This co-existence fascinated Cushing so much that the founding father wrote in 1938 in the compilation of his intracranial meningiomas: ‘the conclusion that an aetiological factor is involved is inescapable’ [1]. Injury at any site causes cell proliferation as a part of healing cascade and scar formation, and mitosis is the greatest challenge to the extremely extensive machinery of DNA repair in human cells, an insurance that the daughter cells are equipped with the same DNA sequences as the mother cell. Furthermore, the healing process may lead to implantation of cells in different environments. However, an exercise in clinical epidemiology shows that the coexistence is a chance occurrence only.

1. Is trauma really tumorigenic/carcinogenic?—obviously not. Otherwise, we would have myriads of connective tissue sarcomas after fractures of bones and rupture of joint ligaments as well as soft tissue sarcomas at the sites of previous blunt injuries—but we do not.
2. The veterans who survived the both World Wars as well the Korean and Vietnamese wars with a skull injury should be a large enough cohort to show a significant co-existence of meningioma and pial/arachnoidal/dural/skull injury—but such data cannot be found.
3. So many craniotomies and burr holes have been performed for decades that a significant meningioma-genic effect of such injury should have become

apparent in the populations now covered by computed tomography (CT) and magnetic resonance imaging (MRI).

4. Intracranial meningiomas are by far more common than the ones diagnosed during lifetime—2.3% of autopsies in a population-based series disclosed an intracranial meningioma [2], and skull injuries are rather common. Instead, later development of an intracranial meningioma at the site of a skull injury is rare entity in any population-based neurosurgical practice. Mr. Murphy and the Devil himself will ensure that rarities occur in twos or threes rather than at equally long intervals in clinical practice.

Francois et al. ‘suggest to perform an initial CT scan with injection when a hospitalization is required (to verify the absence of pre existing tumor) and to perform an MRI 5 years later, only for patients with severe head trauma and with skull fracture. This practical solution avoids repeated CT scans and so the risk of irradiation. Conserving MRI for patients with severe head trauma are rational and it diminishes the number of candidates as well as the afferent costs.’ This is hokum. MRI scans should be more often obtained in cases of brain injury—but to perform them to exclude meningiomas at the site of injury for medico-legal purposes is unrealistic.

References

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