



Foreign body granulomas following cranial neurosurgical procedures

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Dear Editor,

We have read with great interest the latest paper by Al-Afif and colleagues entitled “Intracranial foreign material granulomas after cranial surgery” recently published in *Acta Neurochirurgica (Wien)* [3]. The authors performed an analysis of a series of 12 patients with intracranial tumefactive foreign body granuloma (FBG) induced by synthetic material used in a prior cranial surgery documented in their center over a period of 13 years. In all patients, a second surgery was performed to remove the tumor-like lesion which was then examined neuropathologically. The authors concluded that despite its rarity, FBG should be taken into consideration in the differential diagnosis of intracranial mass lesions, especially in cases of suspected tumor recurrence after prior surgery. As stated by the authors, the pathogenesis of FBG still needs further clarification. The authors’ study clearly demonstrates that FBG has a good prognosis after surgical removal. Firstly, we would like to congratulate the authors for this well-written presentation of the data, but we have some queries to communicate with the authors as follows:

1. In clinical practice, FBGs include both intentional and unintentional materials left in place after cranial surgery. Although the latter is less frequent and certainly underreported due to their medico-legal concerns, the so-called forgotten material in the surgical field should be included in the discussion of such an entity.
2. Most recently, we performed a systematic review of the English language literature in the last half-century and

found a total of 100 cases with FBG, including 77 intentional and the remaining 23 unintentional ones, caused by retained material located within the cranium or surrounding soft tissues [2]. In these cases, the potential of secondary infection should always be kept in mind because there was an associated infection in 14 patients and suspected (no-documented) in the other 8 cases, with a complete recovery in about half of patients [2]. On this topic, most of the literature consists of case reports or small case series. The largest series in the current literature reports a total of 5 cases with FBG [5, 6]. So, how to explain this relatively high number of intracranial FBGs with 12 cases following cranial surgery in Al-Afif’s clinical series during a limited period?

3. As reported in our article, accurate information concerning the previous surgery (e.g., review of the detailed operative report including use of foreign bodies), postoperative treatment protocol, and analysis of neuroimaging findings may suggest a correct diagnosis in such cases, although it is difficult to diagnose postoperative FBGs due to their nonspecific nature [2]. Anyway, it is obvious that the final diagnosis must be helped by the high index suspicion of the surgeon and the intraoperative findings.
4. Clinically, some authors reported a significant improvement under courses of corticosteroids in their patients with intracranial FBG in past, although no histopathologic verification had been obtained in these cases [4, 7]. Based on our experiences and literature data, we also believe that a conservative approach can be adopted with steroids medication in addition to the surgical treatment for such cases of FBG within the cranial cavity.
5. Moreover, there is no doubt that precautions must be taken (e.g., strict adherence to rules of operating room by surgical team and continuous strict medical training) in order to avoid the complications in cases with FBG induced by “forgotten” material left in place [1]. Importantly, FBG’s should be kept in mind when new symptoms develop following a surgical procedure or in cases of suspected tumor recurrence or abscess formation on postoperative imaging.

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Lastly, we would like to underline that neurosurgeons should focus more on newest hemostatic agents and foreign materials to find out whether they enhance the risk of abnormal inflammatory reaction and/or granuloma formation following cranial surgeries or not.

As a result, we hope that this information will contribute to a better understanding of this underestimated entity by the readers of *Acta Neurochirurgica (Wien)* with our deepest respect.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

References

1. Akhaddar A, Boulahroud O, Naama O, Al-Bouzidi A, Boucetta M (2012) Paraspinal textiloma after posterior lumbar surgery: a wolf in sheep's clothing. *World Neurosurg* 77:375–380
2. Akhaddar A, Turgut AT, Turgut M (2018) Foreign body granuloma following cranial surgery: a systematic review of published cases. *World Neurosurg* 120:457–475. <https://doi.org/10.1016/j.wneu.2018.09.143>
3. Al-Afif S, Hatipoglu Majernik G, Hermann EJ, Esmaeilzadeh M, Hartmann C, Krauss JK (2018) Intracranial foreign material granulomas after cranial surgery. *Acta Neurochir* 160:2069–2075. <https://doi.org/10.1007/s00701-018-3663-0>
4. Bhatti MT, Holder CA, Newman NJ, Hudgins PA (2000) MR characteristics of muslin-induced optic neuropathy: report of two cases and review of the literature. *AJNR Am J Neuroradiol* 21:346–352
5. Chen J, Lee S, Lui T, Yeh Y, Chen T, Tzaan W (2000) Teflon granuloma after microvascular decompression for trigeminal neuralgia. *Surg Neurol* 53:281–287
6. Ribalta T, McCutcheon IE, Neto AG, Gupta D, Kumar AJ, Biddle DA, Langford LA, Bruner JM, Leeds NE, Fuller GN (2004) Textiloma (gossypiboma) mimicking recurrent intracranial tumor. *Arch Pathol Lab Med* 128:749–758
7. Yoon MA, Kim E, Kwon BJ, Kim JE, Kang HS, Park JH, Sohn CH, Kim JH, Lee DH (2010) Muslinoma and muslin-induced foreign body inflammatory reactions after surgical clipping and wrapping for intracranial aneurysms: imaging findings and clinical features. *J Neurosurg* 112:640–647