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Case Reports & Case Series

Persistent post-craniotomy headache: A three-case series

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A B S T R A C T

Reported case series of persistent post-craniotomy headache are scant. We herein report our three-case series of persistent post-craniotomy headache diagnosed in our headache clinic. These headache is frequently observed after suboccipital craniectomy. Our neurotropin medications were effective for all patients. Adhesion between the dura and scalp has been suspected as a cause of post-craniotomy headache. Neurosurgeons should keep in mind the possibility of post-craniotomy headache, and patients and their families should be fully informed of the risk of post-craniotomy headache.

1. Introduction

Post-craniotomy headache is headache that develops after craniotomy surgery and is not caused by a primary disorder or surgical complication. The International classification of headache disorder, 3rd edition, defines post-craniotomy headache as “5.5 Acute headache attributed to craniotomy” and “5.6 Persistent headache attributed to craniotomy” [1]. Persistent post-craniotomy headache is diagnosed after more than three months’ persistence of headache. However, reported case series of persistent post-craniotomy headache are scant. We herein report our three-case series of persistent post-craniotomy headache diagnosed in our headache clinic.

2. Case reports

Case 1 was a 40-year-old woman. She had begun to experience left facial spasm six years earlier. Medical therapies, including botulinum toxin, were not effective, so she received microvascular decompression surgery two years ago at another hospital. Left sub-occipital craniectomy, the displacement of the left posterior inferior cerebellar artery and insertion of an artificial prosthesis were performed. Her facial spasm disappeared half a year after this surgery; however, general headache appeared one month after this surgery. No wound pain or cranial infection was observed. Her headache worsened with physical exertion. No nausea or hypersensitivity was observed. Non-steroidal anti-inflammatory drugs (NSAIDs), valproic acid and angiotensin receptor blockers were prescribed; however, these medications were not effective for her headache, so she was referred to our headache clinic. Magnetic resonance imaging (MRI) showed only normal post-surgical changes (Fig. 1). Cervical MRI also showed normal findings (Fig. 1). Our initial diagnosis was tension-type headache, so we prescribed amitriptyline and Kakkonto (a Chinese herbal medicine). Because of the side effect of sleepiness, amitriptyline was stopped. Her headache was not improved, so we prescribed neurotropin (an extract from inflamed cutaneous tissue of rabbits inoculated with vaccinia virus, Neurotropin tablet; Nippon Zoki, Osaka, Japan). After starting this medication, her headache gradually improved. We changed Kakkonto to Saireito (another Chinese herbal medicine), and further improvement of her headache was observed. These medications were gradually tapered and stopped after about one year, and her headache completely disappeared.

Case 2 was a 75-year-old woman. She has been taking medications for hypertension, bronchitis, osteoporosis and mild glaucoma. She underwent suboccipital craniectomy and decompression surgery for a six-year history of right trigeminal neuralgia at another hospital. Her trigeminal neuralgia was improved; however, post-surgical cerebrospinal fluid (CSF) rhinorrhea was observed. Conservative therapy was not effective for CSF rhinorrhea, so she received surgical closure of CSF rhinorrhea through another suboccipital craniectomy surgery. CSF rhinorrhea was stopped at last, and she was discharged home two months after the first craniotomy surgery. Right frontotemporal headache appeared one month after her discharge. Her headache manifested in everyday life but fluctuated with the weather. No nausea, neck pain or wound pain was observed. Brain computed tomography (CT), MRI and magnetic resonance angiography (MRA) showed only normal surgical changes (Fig. 2). We prescribed neurotropin, and her headache was improved three months later.

Case 3 was a 79-year-old woman. She had undergone left suboccipital craniectomy surgery for left facial spasm at another hospital 17 years earlier. Non-localized headache with occasional occipital head

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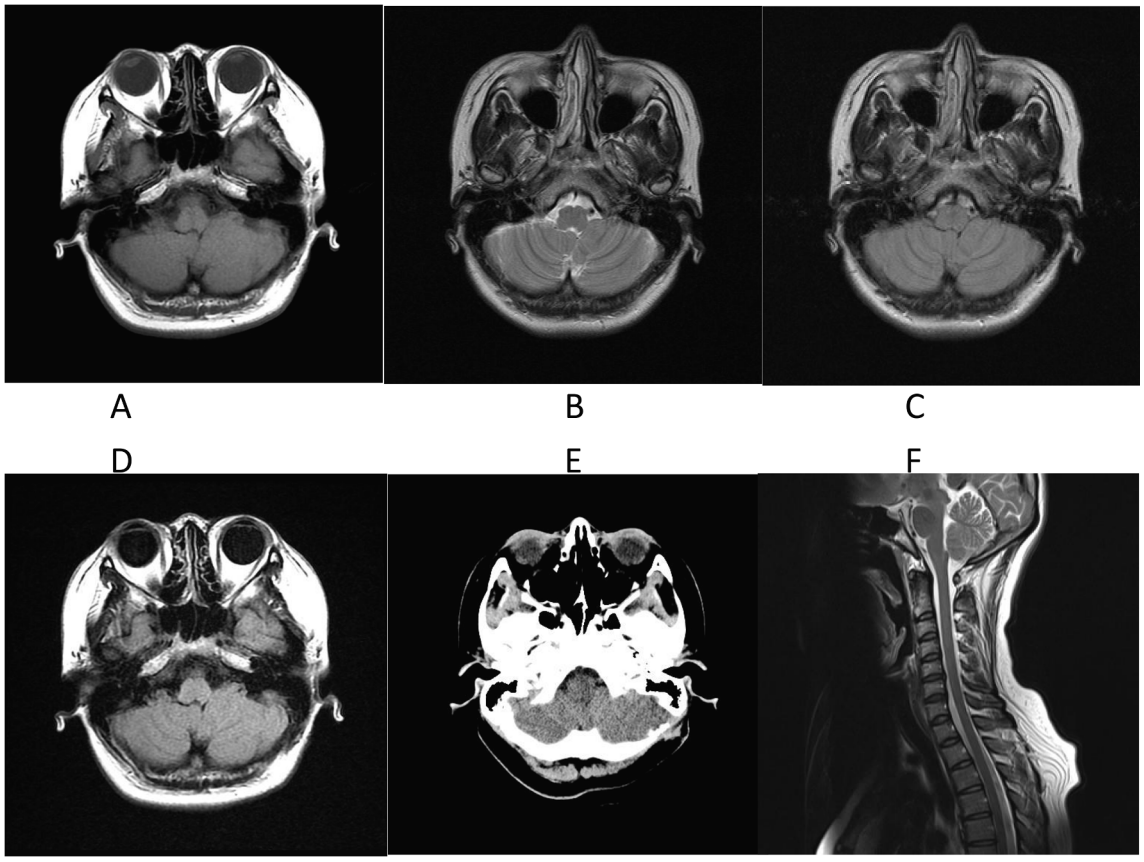

Fig 1. Brain MRI, T1 (A), T2 weighted image (B), FLAIR (C), T1 weighted image with gadolinium-diethylenetriaminepentacetate enhancement (D), brain CT (E), cervical MRI T2 weighted image of case 1.

dullness appeared after this surgery. NSAIDs were prescribed, but the effect was transient. Her headache manifested in her daily life for several hours. No nausea, aura or hypersensitivity was observed, nor were any other neurological abnormalities found. Brain CT, MRI and MRA demonstrated only post-surgical changes and age-appropriate findings (Fig. 3). A blood count and blood chemistry showed normal findings. Her headache was dominant in the morning, and she complained of insomnia and also snored. Therefore, sleep apnea syndrome was suspected. However, she seemed to be unwilling to receive continuous positive airway pressure therapy, so polysomnography was not conducted. We started neurotropic medication, and her headache was improved by three months later.

3. Discussion

Reports concerning post-craniotomy headache are scant, so the pathophysiology is not clear. Such headache is frequently observed after suboccipital craniectomy [2], and indeed, all of our patients had a history of suboccipital craniectomy. Most cases of post-craniotomy headache are reported to improve gradually; however, some patients show continuous headache for a long time. NSAIDs may be transiently effective, but the continuous intake of NSAIDs sometimes induces medication over-use headache. Our neurotropin medications were effective for all patients. These effects may be part of the natural course of headache, although Case 3 showed a significant medication effect despite her headache having persisted for 17 years. The most appropriate therapy should be investigated in the future if large numbers of patients can be identified for study inclusion.

Adhesion between the dura and scalp has been suspected as a cause of post-craniotomy headache [2,3]. In the comparative study of suboccipital craniotomy and suboccipital craniectomy, post-craniotomy headache was less frequent in the craniotomy group than the craniectomy group in some studies [2,3] or showed no significant difference in frequency. One study reported a lower incidence of postoperative headache when performing cranioplasty with methyl methacrylate [4]. There has been a report of cranioplasty surgery for patients with post-craniectomy headache, with the patients' headache being improved [3] The addition of an abdominal fat graft after retrosigmoid craniotomy was effective in reducing the rate of chronic headache compared to standard wound closure. One study found that dural plasty instead of direct dural closure was effective in preventing postoperative headache by avoiding tension at the dura, although that study was a retrospective chart analysis. All of our patients received suboccipital craniectomy, although these neurosurgical procedures were performed at other hospitals. Other reports of suboccipital craniotomy have found that less surgical injury of the great occipital nerve resulted in a reduced incidence of postoperative headache.

Neurosurgeons should keep in mind the possibility of post-craniotomy headache, and patients and their families should be fully informed of the risk of post-craniotomy headache. A large observational study to investigate the frequency, risk factors and natural history of post-craniotomy headache and a large interventional study to investigate the most effective therapy for post-craniotomy headache should be planned in the future. Neurosurgeons should be aware of this special type of headache.

Conflict of interest

None.

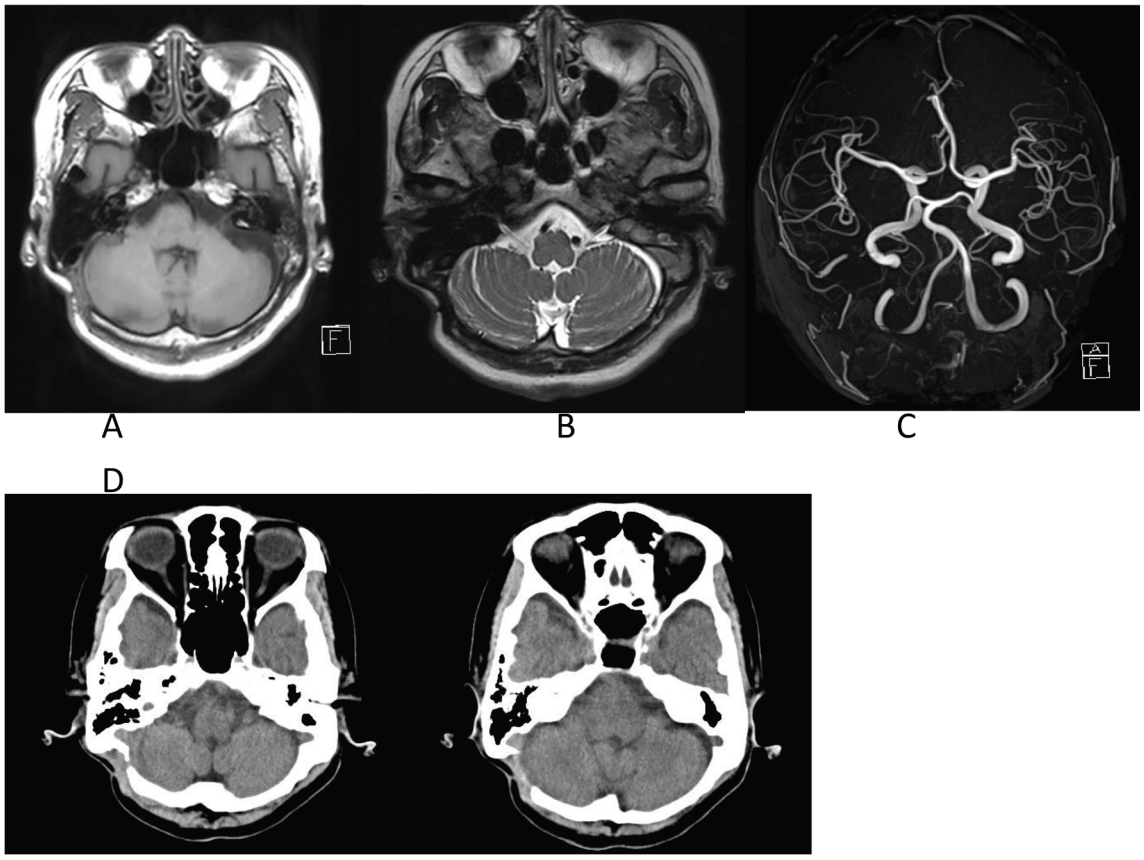

Fig 2. Brain MRI, T1 (A), T2 weighted image (B), brain MRA (C), Brain CT (D) of case 2.

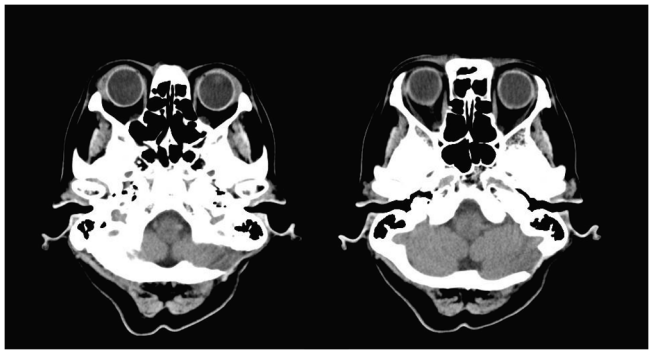

Fig 3. Brain CT of case 3.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.inat.2019.100598.

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