Pituitary Tumor-Associated Headache– A Path to the Treasure Island of Headache Knowledge

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Headache is a very common disorder. Severe headache, such as migraine, usually causes great individual and social impacts. Although most parts of the intracranium are insensitive to pain, many headache syndromes can cause pain by irritating, stretching, or compressing the pain-sensitive structures, such as nerve trunk, some portions of meninges, and vessels. Microstructural and biochemical changes are involved also, such as in the primary headache syndrome[1].

The parasellar region is an anatomically complex area where a number of cranial nerves, cerebral arteries and venous vessels are going through. This busy traffic area contains rich nociceptive receptors. In addition, almost all the nociceptive signals are transmitted to the higher-centers in the CNS by the trigeminal afferent fibers which are also embedded in this area[1,2]. Meanwhile, the neighborhood hypothalamus, an important autonomic center in human body, regulates body homeostasis, such as food ingestion, energy balance, circadian rhythm, thermoregulation, and many emotional responses including pain, via the autonomic and endocrine systems. It is supposed to represent the neural sites responsible for the clinical manifestations and chronobiological features of some headaches. The hypothalamus, especially its posterior regions, becomes activated during attacks of the trigeminal autonomic cephalalgias (TACs)[3].

Pituitary tumors, including adenomas, craniopharyngiomas, aneurysms, and meningiomas are the most common lesions in this region. Ten to fifteen percent of all diagnosed cerebral tumors are pituitary adenomas that frequently occur during the 3rd or 4th decades of life. While silent pituitary adenomas was detected in 10% of the adult population by MRI studies, occult adenomas were described in a large range (5%-27%) of post mortem examinations. Headache was complained in 33-72% of patients with pituitary adenomas, which was also the first symptom in around one-tenth of suffers[4-6]. However, only 3 of 1,876 patients with non-acute headache (0.16%) were found to have pituitary tumor[7].

The headache associated with pituitary tumor may have various phenotypes. It is a long time that the mechanisms are thought mainly to be of mechanical, i.e. local traction on dura, invasion into cavernous sinus, with or without subsequent vasculitis of the orbital sinus[6,8]. However, the biochemical effect can not be overlooked since headache can be a prominent feature even the related tumor is small or non-invasive. Somatostatin analogues can immediately relieve the acromegaly-associated headache without tumor size reduction. In addition, Levy et al. had shown that their patients with pitu-

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itary tumor associated headache are not related to tumor size[5,9]. Retrospectively collected from the headache clinic in Taipei-Veterans General Hospital, Wang et al. reviewed the clinical data of 33 headache patients with pituitary adenoma, and investigated the significance of cranial autonomic symptoms (CAS)[10]. Cranial autonomic symptoms are prominent features of TACs and are not uncommon in pituitary tumor. They found the patients with CAS had higher frequencies of macroadenoma and acromegaly. In addition, their sides of the tumor were significantly concordant with the sides of headaches and those of CAS. They postulated that the pathogeneses for headache might differ between patients with or without CAS.

There are large numbers of headache syndromes, and the mechanisms of each head pain are quite different. Although there is much advance in recent years, the understanding of headache is still incomplete. A number of neoplastic, infectious, inflammatory, developmental and vascular pathologies can occur in the complex parasellar region. Although to explore the underlying mechanisms of headaches originated from this region may be more complicated and difficult than other headaches, it could be a path to the treasure island of headache knowledge.

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