Secondary cough headache: Independent course of headache and response to a COX-2 inhibitor

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Abstract:

We report on two patients with secondary cough headache who responded to the cyclo-oxygenase-2 (COX-2) inhibitor etoricoxib and showed an independent temporal course. This case report shows that secondary cough headache can also respond to medical treatment and can respond to a COX-2 inhibitor, not previously reported. As is seen in primary cough headache, the headache disorder can go into natural remission (case 1) while the secondary pathology progresses and conversely, persist once the secondary pathology has resolved (case 2). The course of the headache and that of the secondary pathology do not necessarily correlate. It is, therefore, proposed that any treatment of the secondary pathology is independent to that of the headache. In NSAID-intolerant cases a COX-2 inhibitor can be trialled first line.

Introduction:

Primary cough headache is defined by headache precipitated by and occurring only in association with coughing, straining or another valsalva manoeuvre. The headache is sudden in onset and lasts one second up to two hours[1]. The most effective treatment is indomethacin; however, responses are often limited by intolerability. We have recently reported on the efficacy of cyclo-oxygenase-2 (COX-2) inhibitors in a group of indomethacin-sensitive headache disorders[2].

Secondary cough headache has been attributed to lesions such as Arnold-Chiari malformation type I (ACM I), spontaneous intracranial hypotension and posterior fossa lesions. In a cohort of 83 patients with cough headache, response to indomethacin was seen in 72.7% with primary cough headache and 37.5% with secondary cough headache[3]. This supports the observation that secondary headaches can respond similarly to primary headaches of the same phenotype.

We report on two patients with secondary cough headache who responded to the COX-2 inhibitor etoricoxib and showed an independent temporal course.

Case Report:

Case 1:

A 28-year-old man presented with a 2-year history of headache and vertigo, related to valsalva (coughing, sneezing, bending, laughing); he experienced pain at the vertex and periorbital regions, with motion sensitivity, lasting 30 seconds. Neurological examination was normal. MRI brain and spine showed an ACM I with 18mm tonsillar descent. There was a syrinx from C2 to T5 (**Figure 1**). He subsequently had endoscopy proven gastric ulceration and thus was started on etoricoxib to which the cough headache responded. From 2016 he developed pins and needles in the right hand and intermittent slurred speech. He had rapid

uncoordinated tongue movements, bilateral temperature sensory deficit C6-C8, absent upper limb reflexes, left heel-shin ataxia and impaired proprioception. The cough headache settled and remained so off the etoricoxib; he occasionally got valsalva-precipitated vertigo. With this there was progression of the syrinx to T8. Since then, he has developed mild increased lower limb tone and brisk reflexes; the syrinx has extended to T9 but with reduction in anterior-posterior diameter. He has elected to continue conservative management with no new symptoms.

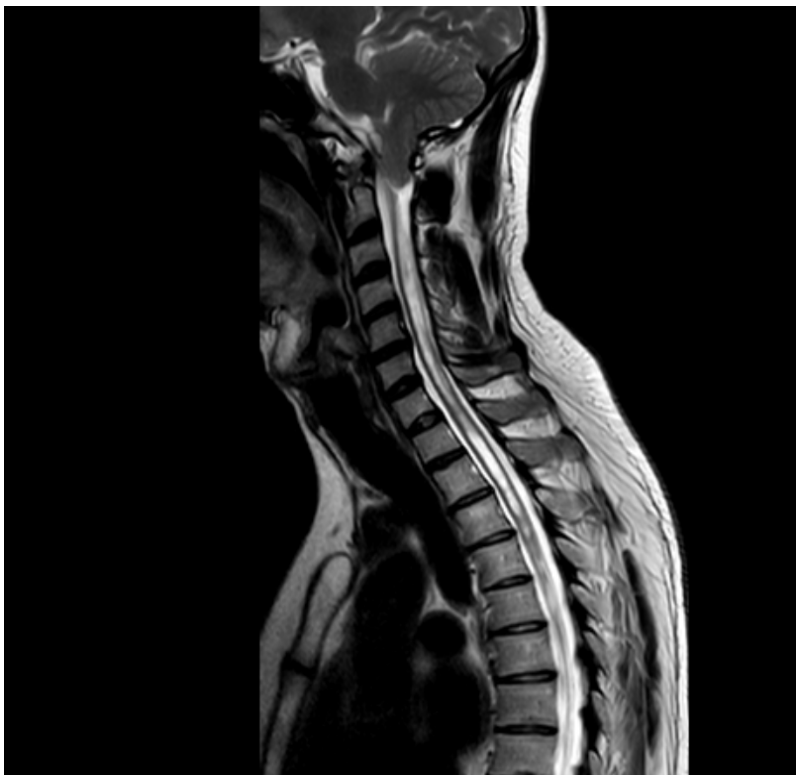

Figure 1. *Sagittal T2-weighted MRI sequences of the cervical spine of case 1 with secondary cough headache. Imaging shows an Arnold-Chiari malformation type I with approximately 18mm tonsillar descent relative to the foramen magnum and a large syrinx from C2 to T5. Irrespective of whether primary or secondary, the disorder remains COX-2 responsive with etoricoxib.*

Case 2:

A 51-year-old woman presented with a pressure sensation in her head after lifting. When she coughed, sneezed, laughed or cleared her throat, she developed a throbbing generalised headache with left-sided rhinorrhoea, lasting 5 minutes. Although this patient did not have any additional features of migraine other than the bilaterally and throbbing, patients with migraine can experience autonomic symptoms which do not

necessarily correlate with the laterality of the headache[4,5]. She woke pain free, but by the afternoon the attacks would be precipitated by any valsalva. Over subsequent weeks the duration increased. If she laid down the pain resolved within 6 minutes.

She had not responded to amitriptyline, propranolol, prednisolone and topiramate. She had a history of gastric ulceration secondary to non-steroidal anti-inflammatory drugs (NSAIDs) taken for joint pain. She was hypermobile, and her daughter had been diagnosed with Marfan syndrome. Neurological examination was normal. MRI brain showed low-lying cerebellar tonsils measuring 4mm below the foramen magnum.

She had a good response to indomethacin 50mg tds and with the addition of theophylline 250mg was rendered largely pain free. Over 2 years the postural tendency resolved. Repeat imaging of the brain with gadolinium and the spine showed a Tarlov cyst, thought to be incidental. She was able to withdraw the theophylline. She could not tolerate dizziness on the indomethacin and started etoricoxib; on 90mg the symptoms have been controlled more effectively for the last 3 years.

Discussion:

Whether there is a causal relationship between a headache and secondary pathology remains presumptive and based on temporal coincidence. The historical premise of a secondary headache has been that the headache resolves with treatment of the offending pathology, although over time the remit has broadened to acknowledge persistent headache following resolution of some secondary pathologies[1]. This may reflect the fact that many secondary headaches have the same phenotype as primary headaches and occur in those with a predisposition. The natural history of cough headache is of symptomatic periods which tend to be self-limiting lasting months or a few years at a time[6]. Thus, the reported resolution of the headache following intervention of the presumptive secondary pathology may simply reflect natural history of the disorder. This is particularly pertinent for isolated ACM I, where the natural history of the malformation with or without syrinx is largely benign and non-progressive[7].

Conclusion:

This report shows that secondary cough headache can also respond to medical treatment and can respond to a COX-2 inhibitor, not previously reported. As is seen in primary cough headache, the headache disorder can go into natural remission (case 1) while the secondary pathology progresses and conversely, persist once the secondary pathology has resolved (case 2). The course of the headache and that of the secondary pathology do not necessarily correlate. It is, therefore, proposed that any treatment of the secondary pathology is independent to that of the headache. In NSAID-intolerant cases a COX-2 inhibitor can be trialled first line.

Highlights:

1. As is seen in primary cough headache, the headache disorder can go into natural remission while the secondary pathology progresses and conversely, persist once the secondary pathology has resolved.
2. The course of the headache and that of the secondary pathology do not necessarily correlate.
3. Secondary cough headache can respond to medical treatment and can respond to a COX-2 inhibitor.

List of abbreviations:

Arnold-Chiari malformation type I: ACM I;

cyclo-oxygenase-2: COX-2;

magnetic resonance imaging: MRI;

non-steroidal anti-inflammatory drug: NSAID.

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