

Letter to the Editor



# Letter to the Editor: Influence of Gender on Occurrence of Chronic Subdural Hematoma; Is It an Effect of Cranial Asymmetry? (Korean J Neurotrauma 2014;10:82–85)

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► See the article “Influence of Gender on Occurrence of Chronic Subdural Hematoma; Is It an Effect of Cranial Asymmetry?” in volume 10 on page 82.

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**Conflict of Interest**

The author has no financial conflicts of interest.

Dear Editor,

We read with interest the article: “Influence of Gender on Occurrence of Chronic Subdural Hematoma; Is It an Effect of Cranial Asymmetry?”, Oh et al.<sup>3)</sup> note that no known risk factor currently accounts for a repeatedly confirmed male bias in chronic subdural hematoma (CSDH). In their novel study, Oh et al.<sup>3)</sup> suggest that both the excess size and asymmetry of the intra-cranial cavity volume (i.e. in relation to underlying atrophic brain) may determine the risk toward the development of CSDH.<sup>3)</sup>

Atrophy assessment is problematic with CSDH, because such assessment cannot be accurately performed on most presentation scans. Instead, atrophy assessment requires either contemporaneous pre-morbid scans, or convalescent scans soon after CSDH resolution (after resolution of brain distortion). Error is potentially introduced at either juncture because atrophy could have progressed in the interim from CSDH causation to presentation, or during CSDH treatment through to convalescence.<sup>2)</sup>

Marshman et al.<sup>2)</sup> previously found that, not only did no risk factor favour males but, instead, several risk factors paradoxically favoured females. Indeed, anti-platelet and anti-coagulant use significantly favoured females in CSDH risk.<sup>2)</sup> That is, the results of Marshman et al.<sup>2)</sup> suggested that, based purely on risk factors, females should be more prone to develop CSDH rather than males: i.e. the opposite to what is naturally and repeatedly observed.

All of the risk factors studied by Marshman et al.<sup>2)</sup> represented risk factors for cerebral atrophy development. Notwithstanding, no significant gender bias was found in cerebral atrophy itself (the largest risk factor). Indeed, the trend found by Marshman et al.<sup>2)</sup> was also paradoxically for severer atrophy in females. As with Oh et al.,<sup>3)</sup> however, 3-dimensional volumetric assessment was not used to measure atrophy.

Notwithstanding, no gender bias for atrophy is acknowledged in standard neuropathology texts.<sup>1)</sup> Furthermore, if atrophy is age-dependent after the 6th decade (methodological bias

in secular trends, co-morbidities and atrophy assessment surprisingly precludes definitive conclusions here),<sup>1)</sup> males were younger to a degree that approached statistical significance (male:female: 68±15 vs. 72±13 years,  $p=0.09$ ) in the study of Marshman et al.<sup>2)</sup>

In their discussion, Marshman et al.<sup>2)</sup> noted that a similar male bias (approximately 2:1) also pertains for another entity which peculiarly affects the 'subdural space': i.e. subdural empyema (SBDE).<sup>2)</sup> SBDE is not only pathologically dissimilar to CSDH, it is epidemiologically dissimilar. Thus, SBDE occurs at a markedly younger age than CSDH: 76% of SBDE occur in the second or third decades. The significantly younger age for SBDE reflects sinusitis as the principal underlying cause (up to 70%); however, no sex bias exists for sinusitis (indeed, a female bias may even exist here).<sup>2)</sup>

Whilst it is not possible for a single centre to derive sufficient numbers for full SBDE risk factor analysis, a review of cases with requisite information similarly reveals that no risk factor can account for the male bias with SBDE either.<sup>2)</sup> A similar male bias between CSDH and SBDE therefore suggests either unknown or unexplored clinical factors common between CSDH and SBDE, or (probably more likely) innate anatomical or physiological factors curiously more prevalent in males.<sup>2)</sup>

In conclusion, we therefore welcome the valuable addition to the literature by Oh et al.<sup>3)</sup> The current mantra in most neurosurgery texts, i.e. that a CSDH male bias relates to increased male frequencies of trauma and alcohol abuse/dependence, is not only unsubstantiated; however, increasingly refuted.<sup>2,3)</sup> The study of Oh et al.<sup>3)</sup> helps to shed more light on this curiously overlooked area. Their study suggests the effect of innate anatomical factors which coincides with an earlier study using an entirely unrelated line-of-thought.<sup>2)</sup>

Yours sincerely  
Laurence Marshman

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