

## Editor's Pick in July 2023

**Bum-Tae Kim**

*Former Editor in Chief, Journal of Korean Neurosurgical Society; Department of Neurosurgery, Soonchunhyang University Bucheon Hospital, Bucheon, Korea*

Among the 13 papers published in the July issue of *Journal of Korean Neurosurgical Society (JKNS)* 2023, I would like to introduce the following two papers that are expected to impact the readers selected by the editorial boards.

The first study revealed the magnetic resonance imaging (MRI) images and histological characteristics of Chiari malformation II (CM II) in an open neural tube defect (ONTD) model that was established experimentally using chick embryos. Interestingly, the results of this study are consistent with the imaging and surgical findings implemented in clinical practice, and it is thought that they can have a great impact on the pathophysiological research and treatment of CM II in the future. The second study investigated the incidence and risk factors of vestibular schwannoma (VS) in Korea from a population perspective. These results have important implications for government policy reflection and academic value. The database held by the National Health Insurance Service is becoming an important research tool and is used in various fields of nervous system research<sup>4,5)</sup>. It can be used to compare characteristics with those of other countries, and it is thought that it will be used as an interesting research material for overseas researchers.

### **Chiari malformation with surgically induced open neural tube defect in late chick embryos : characterization by magnetic resonance imaging and histopathological analysis<sup>2)</sup>**

Despite aggressive management, CM II continues to cause various devastating neurological dysfunctions in patients with spinal open ONTD. The aim of the present study was to validate a CM II model in late-stage chick embryos with surgically induced ONTD developed by authors<sup>6)</sup>. The authors evaluated the pathophysiology of CM II associated with spinal ONTD by using MRI and histopathological examination.

MRI evaluation of the posterior fossa in embryos with ONTDs showed that the bony posterior fossa was smaller than that in the control group, with a rather flattened curvature. The cerebrospinal fluid signal was also apparently absent or barely visible owing to overcrowding in the surgically induced ONTD group. The cerebellum was located caudally; however, no herniation into the vertebral column was observed. Morphological changes were more prominent in the postoperative day (POD) 17–18 group than in the POD 14–15 group. Embryos with ONTD also showed distinct histomorphological changes, similar to the MRI findings. The cerebellum was located at the lower levels, with a shorter distance between the posterior end of the cerebellum and the upper margin of the posterior arch of

• Received : June 12, 2023 • Revised : June 13, 2023 • Accepted : June 14, 2023

• Address for correspondence : **Bum-Tae Kim**

Department of Neurosurgery, Soonchunhyang University Bucheon Hospital, 170 Jomaru-ro, Bucheon 14584, Korea

Tel : +82-32-621-5289, Fax : +82-32-621-5107, E-mail : bumtkim@gmail.com, ORCID : <https://orcid.org/0000-0003-2646-8165>

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

C1. The spaces between the cerebellar cortex, anterior to the dorsal surface of the upper brain stem, and posterior to the inner table of the skull were narrower and smaller in the surgically induced ODNT group. The subarachnoid spaces around the cerebellar cortex were narrower.

These characteristic results of the posterior fossa on MRI and histological examination in chick embryos with surgical ONTD demonstrated progressive pathological changes in CM II with morphological similarity to those in humans. Therefore, this model can serve as an important tool for understanding the pathogenesis of CM II and can be applied in future investigations of various fetal therapeutic strategies.

### Incidence and risk factors of vestibular schwannoma in Korea : a population-based study<sup>3)</sup>

Little information exists on the incidence of VS worldwide; however, several studies have reported a national incidence rate of VS ranging from approximately 0.6 to 3.3 per 100000 populations<sup>1)</sup>. Population-based studies on VS have not been conducted in Korea, similar to most other countries. This study aimed to investigate the incidence of VS, associated demographic characteristics, and risk factors for VS in Korea using population-based National Health Insurance Service data.

Overall, from 2005 to 2020, there were 5751 patients with VS, with an overall annual incidence rate of 0.71 per 100000. The VS group included 2456 male patients (42.7%) and 3295 female patients (57.3%). The mean age of the VS group was 53.42, and that of the control group was 53.35. The annual incidence in females was higher than that in males for all ages except those aged 80 years or older. The overall female-to-male incidence ratio was 1.225, and the sex difference in the VS was statistically significant. Regarding treatment modalities, patients who received radiosurgery (46.64%) were the most common, followed by the wait-and-scan group (37.96%), the microsurgery group (12.85%), and those who received both (2.56%). In the multivariate Cox regression analysis, VS was associated with diabetes mellitus and dyslipidemia. Interestingly, alcohol consumption increased the risk of VS; in contrast, smoking was associated with a decreased risk.

The significance of this study is the presentation of population-based data, including the entire Korean, and investigated the incidence and risk factors for VS. One of the limitations of this study is the possible misclassification or misdiagnosis of VS. Nonetheless, this epidemiological study of VS could be

used by clinicians to investigate and treat brain tumors, including VS.

## AUTHORS' DECLARATION

### Conflicts of interest

No other potential conflict of interest relevant to this article was reported.

### Author contributions

Conceptualization : BTK; Data curation : BTK; Funding acquisition : BTK; Methodology : BTK; Writing - original draft : BTK; Writing - review & editing : BTK

### Data sharing

None

### Preprint

None

## ORCID

Bum-Tae Kim      <https://orcid.org/0000-0003-2646-8165>

### • Acknowledgements

This work was supported by Soonchunhyang University Research Fund.

## References

1. Babu R, Sharma R, Bagley JH, Hatel J, Friedman AH, Adamson C : Vestibular schwannomas in the modern era: epidemiology, treatment trends, and disparities in management. **J Neurosurg** 119 : 121-130, 2013
2. Hwang IS, Kim KH, Sim KB : Chiari malformation with surgically induced open neural tube defect in late chick embryos : characterization by magnetic resonance imaging and histopathological analysis. **J Korean Neurosurg Soc** 66 : 393-399
3. Kim S, Lee YH, Park S, Jeong J, Chang KH : Incidence and risk factors of vestibular schwannoma in Korea : a population-based study. **J Korean Neurosurg Soc** 66 : 456-464
4. Lee MH, Park HR, Chang JC, Park HK, Lee GS : A nationwide study on the impact of COVID-19 pandemic on volume of spine surgery in South

- Korea. **J Korean Neurosurg Soc** 65 : 741-750, 2022
5. Sheen SH, Hong JB, Kim H, Kim J, Han IB, Sohn S : The relationship between Parkinson's disease and acute myocardial infarction in Korea : a nationwide longitudinal cohort study. **J Korean Neurosurg Soc** 65 : 507-513, 2022
  6. Sim KB, Hong SK, Cho BK, Choi DY, Wang KC : Experimentally induced Chiari-like malformation with myeloschisis in chick embryos. **J Korean Med Sci** 11 : 509-516, 1996