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IMAGING HIGHLIGHTS

Unique pattern of high-altitude cerebral edema in an elderly adult

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A healthy 72-year-old woman climbed Mount Everest and stayed at the high-altitude (5,200m) peak for 5 days. She had to climb down given the abrupt appearance of nausea, somnolence, and truncal ataxia. When she completely descended from the mountain, symptoms almost disappeared. She visited our hospital 2 weeks after she first experienced these symptoms, at which point the symptoms had improved. Brain MRI was conducted on the same day as the visit. A high signal intensity at the corpus callosum was observed on the fluid attenuated inversion recovery (FLAIR) and T2-weighted images, which confirmed that she had vasogenic edema. Microhemorrhages (MHs) were not distinguishable (Figures 1A, B). Follow-up tests were conducted 4 weeks after the first appearance of the symptoms. The FLAIR image did not show the high signal intensity that was observed in the second week. However, many MHs, which were not observed in the first MRI, were observed in susceptibility-weighted image (SWI) (Figures 1C, D).

High-altitude cerebral edema (HACE) frequently occurs in patients who climb altitudes over 4,500m; almost all the patients with HACE experience headache similar to that experienced by the study subject. Moreover, approximately 32% of the patients experienced mental deterioration and hallucinations when exposed to an altitude over 7,500m.[1] Our patient showed severe symptoms accompanied by mental deterioration. It is known that the corpus callosum edema on MRI is significantly related to the severity of the clinical symptoms.[2] MHs were observed all over the brain in our patient and not just at the corpus callosum, and the clinical symptoms were very severe. Considering these results, we speculate that an elderly person can have blood brain barrier damage at a lower altitude than a young person would, and MHs can easily occur all over the brain and not only at the corpus callosum; these MHs can lead to HACE.

Keywords: Acute mountain sickness, corpus callosum, high-altitude cerebral edema, microhemorrhages.

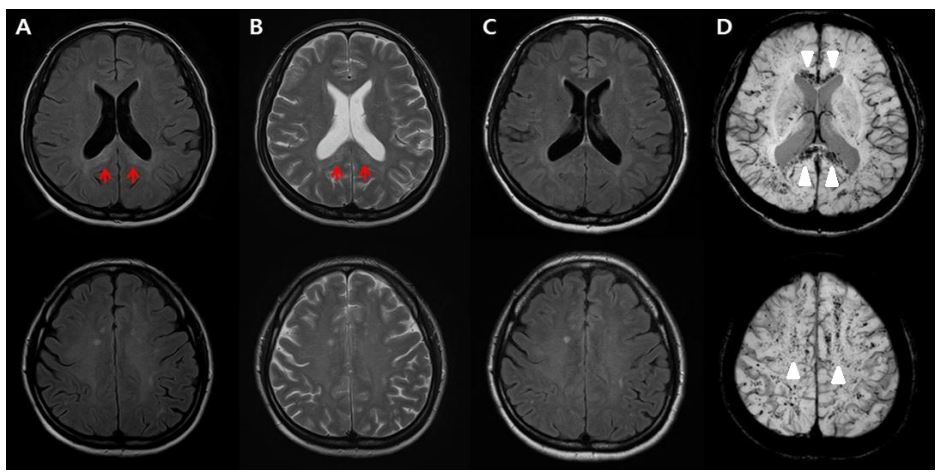

Figure 1. MRI at 2 weeks (A and B) and 4 weeks (C and D) after the first onset of symptoms Fluid-attenuated inversion recovery (FLAIR) images (A) and T2-weighted images (B) showed an edematous high-signal lesion at the corpus callosum (arrows). These high signal intensity lesions disappeared on the follow-up FLAIR images (C), and multiple patchy microhemorrhages newly appeared on the susceptible-weighted images (SWI) over a diffuse area including the area of the lesion (D) (arrow heads).

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DISCLOSURE

Conflicts of interest: None.

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