

뇌 CT에서 출혈로 오인된 소뇌의 허상: 증례보고

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- Abstract -

Unusual Brain Computed Tomography Artifact in Cerebellum Mimicking Hemorrhage: A Case Report

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Artifacts can seriously degrade the quality of computed tomography (CT) images, sometimes to the point of making them diagnostically unusable. Here, we report an unusual CT artifact that could have resulted in the misdiagnosis of a hyperdense hemorrhagic lesion in a 55-year-old man. The author recommend that when hemorrhagic lesion in posterior fossa is suggested on CT, the physician should carefully consider all patient-related clinical data prior to considering surgical intervention or a biopsy. Cranial magnetic resonance imaging (MRI) can help in preventing the misdiagnosis as hemorrhage of CT scan. [J Trauma Inj 2015; 28: 195-197]

Key Words: Artifact, Computed tomography, Misdiagnosis, Magnetic resonance imaging

I. Introduction

In computed tomography (CT), the term artifact is applied to any systematic discrepancy between the CT numbers in the reconstructed image and the actual attenuation coefficients of the object.(1) Artifacts can seriously degrade the quality of CT images, sometimes to the point of making them diagnostically unusable. Here, we report an unusual

CT artifact that could have resulted in the misdiagnosis of a hyperdense hemorrhagic lesion in a 55-year-old man.

II. Case Presentation

The patient was admitted to an emergency room with complaints of severe vertigo, nausea, and vomiting that had developed suddenly, and were worsened by head trauma. Neurological examination

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revealed no abnormalities except rightbeating horizontal nystagmus. A CT scan (3-mm section width) (dual-source spiral CT scanner, Somatom Definition Flash; Siemens, Germany) showed a 23×15-mm hyperdense round mass in the left cerebellar hemisphere that was contiguous to the left sigmoid sinus, tentorium cerebella, and petrous bone. The signal intensity in Hounsfield units was 62, which

suggested hemorrhage (Fig. 1). Cranial magnetic resonance imaging (MRI) was performed for further evaluation. However, MRI revealed no abnormal finding (Fig. 2). Therefore, the patient underwent conservative treatment based on a diagnosis of vestibular neuritis. His symptoms disappeared after 5 days, and he was discharged with no neurological deficit.

III. Discussion

Although CT is a relatively accurate diagnostic tool, CT images are inherently more liable to artifacts than conventional radiographs because the image is reconstructed from approximately a million independent detector measurements.⁽¹⁾ Several types of CT artifacts have been identified.^(1,2) (a) A streak artifact, which is often seen around materials that block most X-rays, can be caused by under-sampling, photon starvation, motion, beam hardening, or scatter. (b) Partial volume effect can result when the scanner is unable to differentiate between a small amount of high-density material and a larger amount of lower-density material. (c) A ring artifact, or the appearance of one or many “rings” within an image, is usually due to a detector fault. (d) The appearance of granular speckling on the image is referred to as a noise artifact and is caused

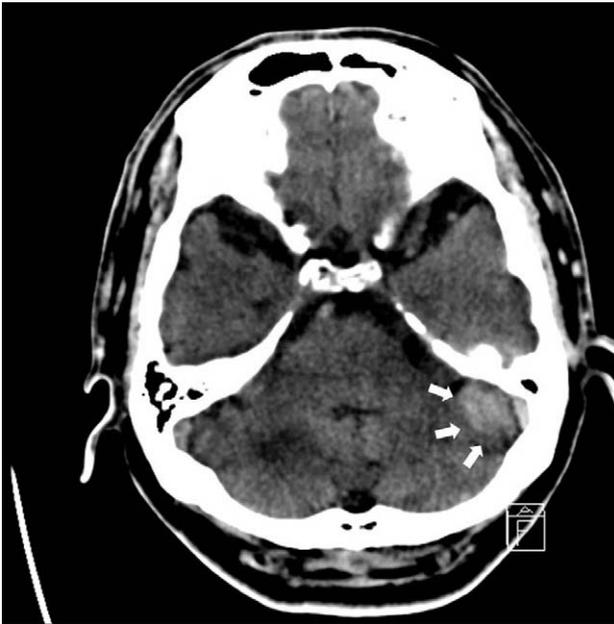


Fig. 1. Cranial CT showing a hyperdense round mass (arrows) in the left cerebellar hemisphere.

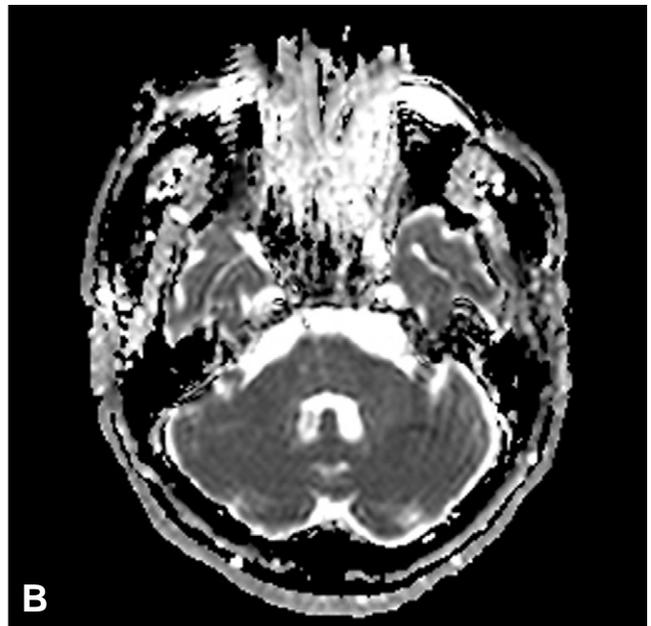
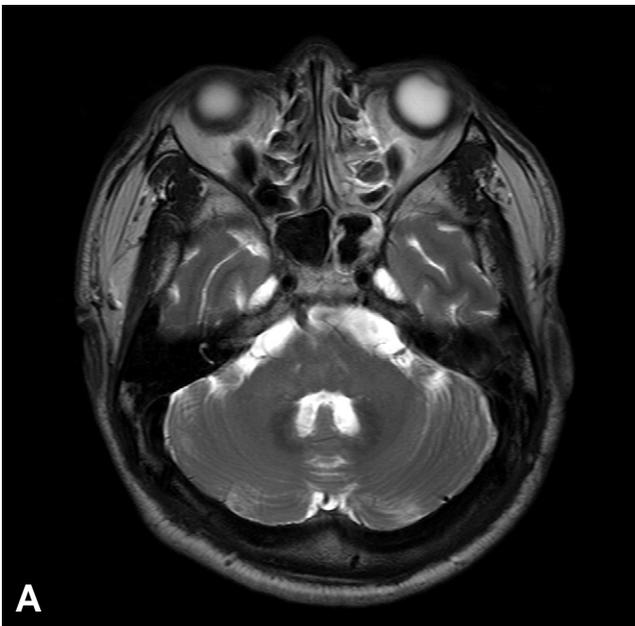


Fig. 2. A cranial T2-weight (A) and gradient-echo (B) MRI showing no abnormal finding

by a low signal-to-noise ratio. (e) Motion artifacts result from the movement of the object being imaged. (f) One specific pattern of streaking is a windmill artifact, which can occur when the detectors intersect the reconstruction plane. (g) Beam hardening can be detected when there is more attenuation in the center of the object than around the edge.

IV. Conclusion

In this case, we concluded that the type of artifact was a streak artifact that commonly occurs in the posterior fossa and that this artifact may have disappeared when using the newer reconstruction of

enhanced CT. The author recommend that when hemorrhagic lesion in posterior fossa is suggested on CT, the physician should carefully consider all patient-related clinical data prior to considering surgical intervention or a biopsy. MRI can help in preventing the misdiagnosis as hemorrhage of CT scan.

REFERENCES

- 1) Barrett JF, Keat N. Artifacts in CT: recognition and avoidance. *Radiographics* 2004; 24: 1679-91.
- 2) Hsieh J. Image artifacts: appearances, causes and corrections. *Computed tomography: principles, design, artifacts and recent advances*. Bellingham, Wash: SPIE Press, 2003. P. 167-240.