



Antimicrobial-associated encephalopathy due to ampicillin

Mizutani, Naoya
Kenzaka, Tsuneaki

(Citation)

Clinical Case Reports, 12(4):e8665

(Issue Date)

2024-04

(Resource Type)

journal article

(Version)

Version of Record

(Rights)

© 2024 The Authors. Clinical Case Reports published by John Wiley & Sons Ltd.
This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

(URL)

<https://hdl.handle.net/20.500.14094/0100488546>



CASE VIDEO

Antimicrobial-associated encephalopathy due to ampicillin

Naoya Mizutani¹ | Tsuneaki Kenzaka^{1,2} ¹Department of Internal Medicine, Hyogo Prefectural Tamba Medical Center, Tamba, Hyogo, Japan²Division of Community Medicine and Career Development, Kobe University Graduate School of Medicine, Kobe, Hyogo, Japan

Correspondence

Tsuneaki Kenzaka, Division of Community Medicine and Career Development, Kobe University Graduate School of Medicine, 2-1-5, Arata-cho, Hyogo-ku, Kobe, Hyogo 652-0032, Japan.

Email: smile.kenzaka@jichi.ac.jp

Key Clinical Message

Because the β -lactam ring has a molecular structure similar to that of gamma-aminobutyric acid (GABA) neurotransmitters, it binds to GABA A receptors and inhibits GABAergic transmission, causing AAE. The possibility of antimicrobial-associated encephalopathy should be considered in cases of neurological or psychiatric symptoms after initiating an antimicrobial regimen.

KEYWORDS

ampicillin, antimicrobial-associated encephalopathy, beta-lactams, penicillin, seizures

An 84-year-old man with a history of mitral and aortic valve replacement surgery for infective endocarditis presented with a complaint of fever that had persisted for

2 weeks. *Enterococcus faecalis* was detected in blood culture. The source of infection was unknown, and ampicillin was initiated after identifying the causative organism.

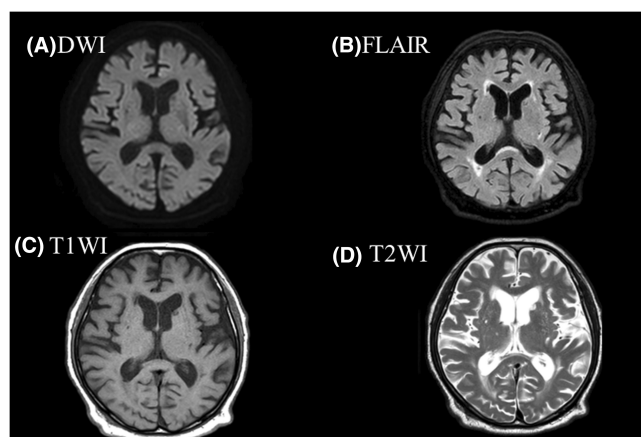


FIGURE 1 Head magnetic resonance imaging. (a) DWI, diffusion-weighted imaging; (b) FLAIR, fluid-attenuated inversion recovery; (c) T1WI, T1-weighted image; (d) T2WI, T2-weighted image. There is no image of a stroke.

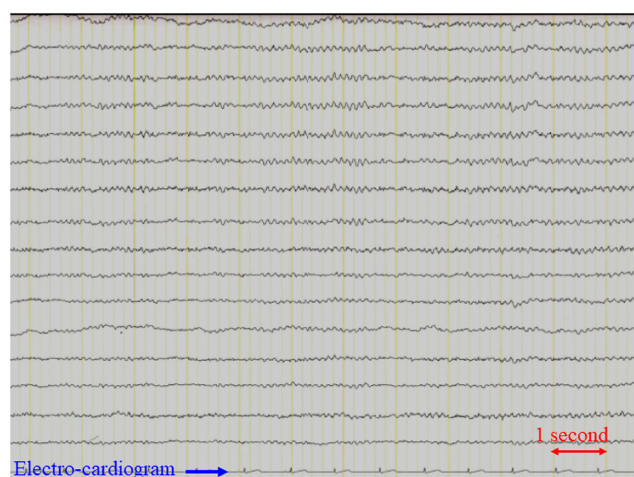


FIGURE 2 Electroencephalograph. Electroencephalograph was recorded at rest, awake, and with eyes closed. It shows a slow wave of approximately 7–8 Hz. No abnormal brain waves that would suggest epilepsy were detected.

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2024 The Authors. *Clinical Case Reports* published by John Wiley & Sons Ltd.

Myoclonus of the right forearm appeared 4 days after treatment (Video S1). Head MRI (Figure 1) and EEG (Figure 2) scans revealed no abnormalities. Ampicillin was changed to daptomycin, and the myoclonus improved the day after. Based on the course of the disease, a diagnosis of antimicrobial-associated encephalopathy caused by ampicillin was made.

AUTHOR CONTRIBUTIONS

Naoya Mizutani: Conceptualization; investigation; methodology; visualization; writing – original draft.

Tsuneaki Kenzaka: Conceptualization; investigation; methodology; supervision; validation; writing – original draft; writing – review and editing.

FUNDING INFORMATION

None of the authors have any financial interests to disclose.

CONFLICT OF INTEREST STATEMENT

None of the authors have any have any conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

Data available on request from the authors.

CONSENT

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy.

ORCID

Tsuneaki Kenzaka  <https://orcid.org/0000-0002-3120-6605>

REFERENCE

1. Bhattacharyya S, Darby RR, Raibagkar P, Gonzalez Castro LN, Berkowitz AL. Antibiotic-associated encephalopathy. *Neurology*. 2016;86:963-971. doi:[10.1212/WNL.0000000000002455](https://doi.org/10.1212/WNL.0000000000002455). Erratum in: *Neurology* 2016;86(22):2116.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Mizutani N, Kenzaka T. Antimicrobial-associated encephalopathy due to ampicillin. *Clin Case Rep*. 2024;12:e8665. doi:[10.1002/ccr3.8665](https://doi.org/10.1002/ccr3.8665)