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# Sinus tachycardia in an ALS-patient receiving edaravone: Case report

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## Introduction

Amyotrophic lateral sclerosis (ALS) is a fatal CNS neurodegenerative disease [1], which is characterized by the degeneration of both upper and lower motor neurons, which leads to muscle weakness and eventual paralysis [2]. Mitsubishi Tanabe Pharma America got U.S. FDA approval for edaravone (Radicava) in May 2017 for the management of ALS. Edaravone, a novel neuroprotective agent, is indicated to slow down progression of ALS [3]. Edaravone is an antioxidant that removes oxygen free radicals and nitric oxide, as oxidative stress plays a prominent role in neuronal cell death [4].

## Case presentation

A 68-year-old lady was diagnosed with ALS and started on edaravone (Radicava), following the protocol of 14 days, daily IV dose. A few days after the initiation the patient started to have sinus tachycardia. During the second 14 days, when edaravone was withheld the patients heart rate improved. During the second cycle and after day 1, heart rate increased to 136 bpm with mild shortness of breath. ECG showed sinus tachycardia. All routine laboratory findings including cardiac biomarkers (High-sensitive troponin), D-Dimers and inflammatory markers were normal. Urgent echocardiography was done and showed tachycardia, with normal LV and RV systolic functions, mildly elevated pulmonary systolic pressure (34 mmHg) and possible straightening of the ventricular septum. CT-angiography of the chest didn't show any signs of pulmonary embolism nor pulmonary insult. The patient was given bisoprolol 2.5 mg daily and improved dramatically with normalization of heart rate. The edaravone course was continued, and the heart rate remained controlled on the daily dose of the beta blocker.

## Results and discussion

When we searched for the safety and side effects of Edaravone, sinus tachycardia was not mentioned [5-10]. A total of 174 articles were reviewed on PUBMED and there was no evidence of sinus tachycardia as a side effect of the drug. When we searched correlating sinus tachycardia and Edaravone, we didn't find any previous case or mentioned correlation between both. The unfavorable outcome of a parenteral formulation is hypersensitivity, infection at the infusion site, and deep vein thrombosis. Sometimes, it can cause headaches, insomnia, and transient leukopenia [4]. The most reported adverse events for the IV edaravone group were contusion, constipation, contact dermatitis, dysphagia, eczema, insomnia, upper respiratory tract inflammation, back pain, headache, and myalgia [11]. Although the patients with ALS have the reduction of HRV with the sympathetic predominance when equated to the healthy subjects [12], but in our patient the clear correlation between the initiation of medication and the tachycardia was clear. Thus, our case is the first case that shows that Edaravone can cause sinus tachycardia, which was symptomatic, and was treated simply with beta blocker without any need to stop nor withhold the course of Edaravone.

## Conclusion

Sinus tachycardia is a possible not-reported side effect of edaravone, which may lead to discontinuation of this important medication. Beta blocker may be a suitable symptomatic therapy which may relieve the symptoms and permit the continuation of edaravone.

## Conflicts of interest

The author declares no conflict of interest.

### References

1. Feldman EL, Goutman SA, Petri S, Mazzini L, Savelieff MG, et al. (2022) Amyotrophic lateral sclerosis. Lancet 400: 1363-1380. [Crossref]
2. Hardiman O, Al-Chalabi A, Chio A, Corr EM, Logroscino G, et al. (2017) Amyotrophic lateral sclerosis. Nat Rev Dis primers 3: 1-9. [Crossref]
3. Bhandari R, Kuhad A (2018) Edaravone: A new hope for deadly amyotrophic lateral sclerosis. Drugs Today (Barc) 54: 349-360. [Crossref]
4. Neupane P, Thada PK, Singh P, Faisal AR, Rai N, et al. (2023) Investigating edaravone use for management of amyotrophic lateral sclerosis (ALS): A narrative review. Cureus 15: e33746. [Crossref]

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5. Chen C, Li M, Lin L, Chen S, Chen Y, et al. (2021) Clinical effects and safety of edaravone in treatment of acute ischaemic stroke: A meta-analysis of randomized controlled trials. J Clin Pharm Ther 46: 907-917. [Crossref]

6. Xu J, Wang Y, Wang A, Gao Z, Gao X, et al. (2019) Safety and efficacy of edaravone dexborneol versus edaravone for patients with acute ischaemic stroke: A phase II, multicentre, randomised, double-blind, multiple-dose, active-controlled clinical trial. Stroke Vasc Neurol 4: 109-114. [Crossref]

7. Writing Group (2017) Edaravone (MCI-186) ALS 19 Study Group. Safety and efficacy of edaravone in well-defined patients with amyotrophic lateral sclerosis: A randomized, double-blind, placebo-controlled trial. Lancet Neurol 16: 505-512.

8. Sawada H (2017) Clinical efficacy of edaravone for the treatment of amyotrophic lateral sclerosis. Expert Opin Pharmacother 18: 735-738. [Crossref]

9. Shefner J, Heiman-Patterson T, Pioro EP, Wiedau-Pazos M, Liu S, et al. (2020) Long-term edaravone efficacy in amyotrophic lateral sclerosis: Post-hoc analyses of Study 19 (MCI186-19). Muscle Nerve 61: 218-221. [Crossref]

10. Witzel S, Maier A, Steinbach R, Grosskreutz J, Koch JC, et al. (2022) Safety and effectiveness of long-term intravenous administration of edaravone for treatment of patients with amyotrophic lateral sclerosis. JAMA Neurol 79: 121-130. [Crossref]

11. Genge A, Pattee GL, Sobue G, Aoki M, Yoshino H, et al. (2023) Oral edaravone demonstrated a favorable safety profile in patients with amyotrophic lateral sclerosis after 48 weeks of treatment. Muscle Nerve 67: 124-129. [Crossref]

12. Silveira AC, Moraes ÍA, Vidigal GP, Simcsik AO, Rosa RM, et al. (2022) Cardiac autonomic modulation in subjects with amyotrophic lateral sclerosis (ALS) during an upper limb virtual reality task: A prospective control trial. BioMed Res Int 2022: 4439681. [Crossref]