



Letter to the Editor

Electroconvulsive therapy (ECT) versus gamma knife radiosurgery for the treatment of severe aggression: Letter-to-the-Editor in response to Romero *et al.*

Charles H. Kellner¹, Randall T. Espinoza², Alexander Sartorius³

¹Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, ²Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, Washington, United States, ³Department of Psychiatry and Psychotherapy, Central Institute of Mental Health, Medical Faculty Mannheim, University of Heidelberg, Mannheim, Germany.

E-mail: *Charles H. Kellner - kellnerfam@hotmail.com; Randall T. Espinoza - respinoz@uw.edu; Alexander Sartorius - alexander.sartorius@zi-mannheim.de



Dear Editor,

We read with great interest the case report by Romero *et al.*^[6] Their reportedly successful treatment of a man who has schizophrenia and poorly controlled aggression with gamma knife lesions to the hypothalamus and amygdala is innovative. However, we had questions about several issues insufficiently covered in detail. While succinct, the report raised broad questions and important ethical issues.

Since gamma knife ablation is irreversible, it is crucial to know that (1) the patient's clinical condition was serious enough to warrant it and (2) all other, including less invasive, approaches were adequately considered. To the first point, the aggression rating scales presented are only partially helpful and do not give the full clinical picture, saying nothing about treatment trials. More helpful would be a fuller description of the patient's pretreatment aggression: How often did these episodes occur, was his aggression self-directed or toward others, had he ever injured others (e.g., staff at the psychiatric hospital), were the aggressions provoked or spontaneous, were any behavioral treatments even partially effective? Likewise, a fuller description of his posttreatment level of functioning would be relevant to understanding outcomes and benefits. For example, was he able to remain in the community and out of the psychiatric hospital?

To the second point, we need more details about the electroconvulsive therapy (ECT) application to assess if treatment was optimized before being abandoned. Specifics of electrode placement, stimulus dosing, adequacy of seizures, and treatment frequency are all relevant to this assessment. Was continuation/maintenance ECT part of the 70 treatments? Did he have any, even temporary, benefit from the ECT, and how was it tolerated? There is considerable and evolving literature about the successful use of ECT to decrease aggression and agitation in various neuropsychiatric conditions, including Alzheimer's dementia,^[4] self-injurious behavior in Autism^[8] and psychosis^[3] (as in the present case).

In addition, this novel use of a modern form of psychosurgery raises important ethical issues. How fully was the patient involved in the informed consent process? In many similar situations, assessment of patient competency and involvement of close family members or legal guardians

***Corresponding author:**

Charles H. Kellner,
Department of Psychiatry and
Behavioral Sciences, Medical
University of South Carolina,
Charleston, United States.

kellnerfam@hotmail.com

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is appropriate and mandated by local jurisdiction.^[5] Was an ethics panel or patient advocacy group involved in the clinical decision-making process?

Finally, and again, because of its irreversible nature, the specifics of the gamma knife neuroanatomical targets and technical aspects need to be more fully explored. While the targets and dosing protocol described here may be reasonable, many other protocols involving other hypothalamic regions or basolateral amygdala, for example, may be alternatives.^[2] The dense complexity of these regions, with effects on a myriad of neurocognitive functions and behaviors, makes the need to avoid unwanted side effects crucial. Thus, the statement that there were no complications should, at a minimum, be substantiated by the results of neuropsychological testing and other behavioral observations. The arguments about the alternative therapy of deep brain stimulation (DBS) being more invasive and less acceptable to the patient because of increased anxiety are open to debate. DBS, including novel targets,^[7] continues to be actively explored for use in neuropsychiatric indications, e.g., depression, as well as applied in movement disorders (Parkinson's Disease and Essential Tremor) and available to use in refractory obsessive-compulsive disorder.^[1]

We applaud Romero *et al.*^[6] for their fascinating contribution to the literature; additional information about the patient and the overall treatment sequence will help readers contextualize the potential generalizability and feasibility of similar interventions. However, we must remember that, in the past, unbridled enthusiasm for surgical lobotomy brought disrepute to neuropsychiatry and neurosurgical interventions. Today, modern targeted ablations may be considered by some an updated form of "lobotomy." We would do well to ensure that these techniques are applied prudently and with due discretion.

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REFERENCES

1. Gadot R, Najera R, Hirani S, Anand A, Storch E, Goodman WK, *et al.* Efficacy of deep brain stimulation for treatment-resistant obsessive-compulsive disorder: Systematic review and meta-analysis. *J Neurol Neurosurg Psychiatry* 2022;jnnp-2021-328738.
2. Gouveia FV, Hamani C, Fonoff ET, Brentani H, Alho EJ, de Moraes RM, *et al.* Amygdala and Hypothalamus: Historical overview with focus on aggression. *Neurosurgery* 2019;85:11-30.
3. Isakov V, Tselikhovsky I, Goldin V, Silver H. What is "effective treatment" for a schizophrenic inpatient with persistent treatment-resistant psychosis and severe violent behavior?: A case of ECT. *J ECT* 2013;29:e66-7.
4. Lapid MI, Merrill J, Mueller M, Hermida AP, Nykamp L, Andrus J, *et al.* Electroconvulsive therapy for the acute management of severe agitation in dementia (ECT-AD): A modified study protocol. *PLoS One* 2024;19:e0303894.
5. Nadler R, Chandler JA. Legal regulation of psychosurgery: A fifty-state survey. *J Leg Med* 2019;39:335-99.
6. Romero OI, Diez-Palma JC, Fonnegra-Caballero A, Segura-Hernández A, Matinez-Alvarez R, Yamhure E, *et al.* Bilateral hypothalamotomy plus dominant amygdalotomy with Gamma Knife radiosurgery. A non-invasive alternative when everything has failed in the management of aggressive behavior disorder. *Surg Neurol Int* 2024;15:469.
7. Sartorius A, Kiening KL, Kirsch P, von Gall CC, Haberkorn U, Unterberg AW, *et al.* Remission of major depression under deep brain stimulation of the lateral habenula in a therapy-refractory patient. *Biol Psychiatry* 2010;67:e9-11.
8. Wachtel L, Luccarelli J, Falligant JM, Smith JR. Electroconvulsive therapy in autism spectrum disorders: An update to the literature. *Curr Opin Psychiatry* 2025;38(2):79-86.

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