CASE REPORT

Transcranial Magnetic Stimulation for Auditory Verbal Hallucinations in Schizophrenia with Comorbid Hyperthyroidism: A Case Report

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ABSTRACT

Background: Auditory verbal hallucinations (AVH) are among the most frequent and distressing positive symptoms of schizophrenia and may persist despite adequate pharmacological treatment. Antipsychotic dose escalation is often required; however, certain medical comorbidities, such as hyperthyroidism, can increase vulnerability to extrapyramidal symptoms (EPS), thereby limiting optimal pharmacotherapy. Low-frequency repetitive transcranial magnetic stimulation (rTMS) represents a potential non-pharmacological adjunctive treatment in such clinical situations. **Case:** We report a 32-year-old woman diagnosed with schizophrenia according to DSM-5-TR criteria with comorbid hyperthyroidism under medical treatment. The patient experienced persistent AVH and developed EPS, including hypersalivation and generalized weakness, following antipsychotic dose escalation. She underwent adjunctive low-frequency rTMS (1 Hz) targeting the left temporoparietal junction at an intensity of 100% motor threshold, delivering 900 pulses per session over 10 sessions. **Discussion:** Following rTMS intervention, the patient showed marked clinical improvement, with complete resolution of AVH and a reduction in the Positive and Negative Syndrome Scale (PANSS) total score from 156 to 38. Adverse effects were minimal and limited to mild transient headache. This case supports existing evidence that low-frequency rTMS targeting the left temporoparietal junction may effectively reduce AVH by modulating abnormal cortical excitability. **Conclusion:** Low-frequency rTMS may serve as an effective and well-tolerated adjunctive therapy for patients with schizophrenia who experience limitations in pharmacological management due to comorbid hyperthyroidism.

Keywords: schizophrenia; auditory verbal hallucinations; low-frequency rTMS; hyperthyroidism; extrapyramidal symptoms

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INTRODUCTION

Schizophrenia is a severe mental disorder characterized by disturbances in reality testing that affect multiple domains of mental functioning, including thought processes, perception, affect, behavior, motivation, and cognition[1]. Auditory verbal hallucinations (AVH) are among the most prominent positive symptoms, occurring in approximately 60–90% of patients, and are frequently associated with significant distress, functional impairment, and increased risk of suicide and aggression[2,3]. Although antipsychotic medications remain the cornerstone of treatment, a substantial proportion of patients continue to experience persistent hallucinations despite adequate pharmacotherapy[4,5].

Medical comorbidities may further complicate the management of schizophrenia. Thyroid disorders, particularly hyperthyroidism, play a critical role in modulating dopaminergic, serotonergic, and glutamatergic neurotransmission[7,8]. Patients with hyperthyroidism are more susceptible to extrapyramidal symptoms (EPS) during antipsychotic treatment, which may limit dose optimization and necessitate alternative therapeutic strategies[10,11]. In such complex clinical contexts, non-invasive neuromodulation techniques such as repetitive transcranial magnetic stimulation (rTMS) have gained increasing attention as adjunctive treatments for refractory symptoms. This case report aims to describe the clinical outcome of low-frequency rTMS in a patient with schizophrenia and persistent auditory verbal hallucinations whose pharmacological management was limited by comorbid hyperthyroidism[6].

CASE

A 32-year-old woman was brought to the Emergency Department following an episode of unprovoked aggressive behavior, during which she kicked a glass cabinet shortly before admission. On initial examination, the patient was found in a recumbent position, appearing poorly groomed, restless, and emitted a noticeable odor of sweat and urine. She was markedly overtalkative and difficult to interrupt. Her speech was disorganized, incoherent, and failed to form meaningful sentences. She responded only when the examiner repeated one of her own words. The patient expressed grandiose and bizarre delusions, stating: “I have special powers, I am Sugigi, I can transform... I am powerful*, blek blek blek*. My name is Sugigi, this is a house, tooth hospital”.

According to heteroanamnesis obtained from her husband, the patient had begun talking to herself approximately six days prior to admission. Initially, the husband was able to reassure her that the voices she heard were not real. One day before hospitalization, the patient developed significant sleep disturbance, refused food intake and personal hygiene, and subsequently became unresponsive to verbal input, spoke continuously without interruption, and exhibited aggressive behavior, prompting emergency hospitalization.

The patient reportedly first experienced symptoms of self-talking approximately 18 months prior to the current admission. Two months before the initial onset of psychiatric symptoms, she was diagnosed with hyperthyroidism based on laboratory findings and had since been receiving regular antithyroid treatment with good adherence. There was no history of psychoactive substance use. A family history of similar symptoms was reported in the patient’s mother. The patient had no history of developmental delay, completed vocational high school education, and had been able to work independently prior to illness onset, indicating preserved premorbid functioning.

Five months before the current admission, the patient had been hospitalized for similar psychiatric symptoms, including auditory verbal hallucinations, restlessness, paranoid ideation, refusal to eat and bathe, and marked behavioral deterioration without

identifiable psychosocial stressors. She was diagnosed with schizophrenia and hyperthyroidism under treatment. Pharmacological management during previous hospitalization and outpatient follow-up included antipsychotic therapy with haloperidol, risperidone, and clozapine, as well as anticholinergic medication. However, attempts at dose escalation were limited by the emergence of extrapyramidal symptoms, particularly hypersalivation and generalized weakness, resulting in persistent auditory verbal hallucinations despite ongoing treatment (Figure 1).

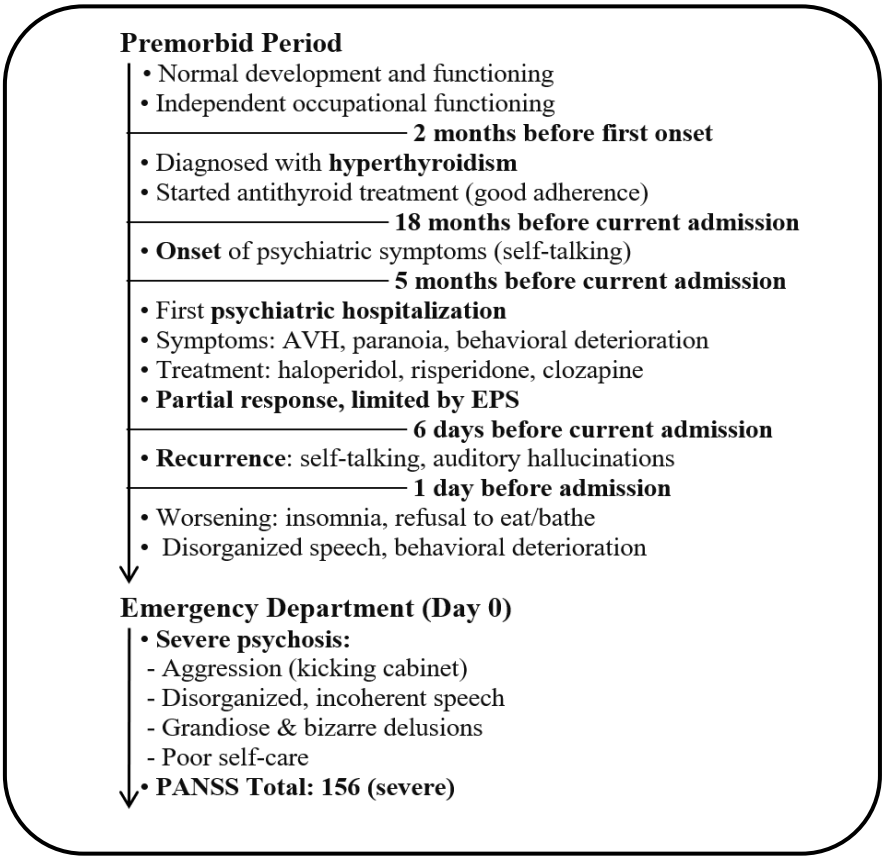

Figure 1. Clinical Timeline of Illness Course

On physical examination at presentation, vital signs were within acceptable limits, including a blood pressure of 127/106 mmHg, a heart rate of 100 beats/minute, a respiratory rate of 18 breaths/minute, and an oxygen saturation of 98% at a temperature of 36°C. General medical and neurological examinations were unremarkable. Mental status examination showed a poorly groomed 32-year-old female with a restless facial expression and a noticeable odor of sweat and urine. Verbal and visual contact were poor. The patient exhibited logorrhea with rapid, low-volume self-talking that was difficult to interrupt. While sensorium was clear, her affect was constricted, and her thought process was non-logical and non-reality-based, characterized by incoherence, grandiose delusions, and auditory verbal hallucinations. Disturbances in instinctual drives were present, including insomnia, hypobulia, and raptus, alongside increased psychomotor activity and a PANSS-EC score of 30, although cognition, judgment, and insight remained unevaluable at presentation.. Laboratory investigations, including complete blood count (Hb 13.5 g/dL, WBC 8.27×10^3/uL, PLT 400×10^3/uL), metabolic panel (RBS 116 mg/dL, Na 141.2 mmol/L, K 4.21 mmol/L, Cl 109.3 mmol/L), liver and renal function tests (SGOT 14 U/L, SGPT 8 U/L, Urea 35 mg/dL, Creatinine 0.61 mg/dL), and thyroid function tests (TSH 0.76 uIU/mL, Free T4 17.75

pmol/L) were within normal limits under ongoing treatment. No abnormality on ECG and chest X-ray findings.

Based on longitudinal history, clinical presentation, and mental status examination, the patient fulfilled DSM-5-TR diagnostic criteria for schizophrenia[1], as evidenced by the presence of multiple core psychotic symptoms (persistent auditory verbal hallucinations, disorganized speech, and delusions), marked functional deterioration affecting self-care and social functioning, and continuous signs of illness persisting for more than six months. Mood disorders with psychotic features, substance-induced psychosis, delirium, and psychosis due to another medical condition were considered less likely based on the absence of substance use, preserved level of consciousness, normal laboratory findings, and the chronic course of symptoms.

Initial management included intramuscular antipsychotic medication for acute agitation, followed by oral antipsychotics and supportive psychotherapy. The patient was subsequently admitted to the psychiatric inpatient unit for further evaluation and management. During hospitalization, pharmacological treatment was optimized but remained limited by extrapyramidal symptoms when antipsychotic dosages were increased, whereas dose reduction resulted in persistent hallucinations (Table 1).

Given these therapeutic limitations, adjunctive low-frequency repetitive transcranial magnetic stimulation (rTMS) was considered. Low-frequency rTMS was administered using a auditory hallucination protocol targeting the left temporoparietal junction, delivered at a frequency of 1 Hz with an intensity of 100% motor threshold. Each session consisted of 900 pulses administered over approximately 19 minutes, and a total of 10 sessions were completed during hospitalization[18].

Following rTMS intervention, a gradual and clinically meaningful improvement was observed. The frequency and intensity of self-talking behavior decreased, and auditory verbal hallucinations progressively diminished and ultimately resolved. By the end of the tenth rTMS session, the patient demonstrated coherent speech, improved affective range, intact reality testing, and absence of hallucinations or delusional content. The Auditory Hallucination Rating Scale (AHRS) score decreased from 11 at baseline to 6 at the end of the 10th session and was found to be 0 two weeks later. The Positive and Negative Syndrome Scale (PANSS) total score decreased from 156 at baseline to 38 two weeks after the 10th session (Figure 2). Adverse effects were minimal and limited to mild headache and transient hypersalivation.

The patient was discharged after a total hospitalization period of 32 days in stable psychiatric and medical condition. At follow-up one week after discharge, she remained free of auditory hallucinations, demonstrated good insight, and reported satisfactory sleep and appetite. Mild hypersalivation persisted but was well tolerated. Three months after discharged, all symptoms have been resolved. The patient report no side effects and an improvement in quality of life.

Table 1. Treatment Timeline and Clinical Response

Care Day / Event	Subjective Symptoms	Psychiatric Status Findings	Psychiatric Medication	Internal Medication	TMS Intervention	Clinical Outcome
Day 1 (ER)	Agitated, kicking glass cabinet, talking to self incessantly, incoherent speech,	Appearance: Unkempt, smell of sweat/urine. Contact: Poor. Mood: Not evaluable, Affect: Constricted.	Injected Olanzapine 10 mg (once), Clozapine 50 mg (night),	PTU 2x100 mg, Propranolol 2x10 mg.	-	Highly agitated, admitted to Psychiatric Intensive Care Unit.

Care Day / Event	Subjective Symptoms	Psychiatric Status Findings	Psychiatric Medication	Internal Medication	TMS Intervention	Clinical Outcome
	claiming to have magical powers (Sugigi).	Thought: Non-logical/non-realist, Logorrhea, Incoherent, Grandiose delusions. Perception: Auditory hallucinations. Instinctual: Insomnia, hypobulia, raptus. PANSS EC: 30.	Fluoxetine 10 mg (morning), Risperidone 2x2 mg, Trihexyphenidyl 3x2 mg.			PANSS Total Score : 156 AHRS Score can't be evaluated yet.
Day 1 (Inpatient Ward)	Nodding/shaking head, slow movements, stiff.	Mutism, Mood/Affect: Blunt, Instinctual: Insomnia (-), Hypobulia (+), Psychomotor: Calm.	Clozapine 25-0-50 mg, Fluoxetine 10 mg (morning), Risperidone 1x2 mg (night), Trihexyphenidyl 3x2 mg.	PTU 2x100 mg, Propranolol 2x10 mg.	-	Mutism and stiffness noted. AHRS Score can't be evaluated yet.
Day 2	Lying down, sleeping, reported talking to self in the morning, weak.	Mutism, Mood/Affect: Blunt, Instinctual: Insomnia (-), Hypobulia (+), Psychomotor: Calm.	Clozapine 25 mg (night), Fluoxetine: Postponed, Risperidone 2 mg (night), Trihexyphenidyl 2 mg (night).	PTU 2x100 mg, Propranolol 2x10 mg.	-	Weakness, medication adjustment. AHRS Score can't be evaluated yet.
Day 8	Still talking to self, no response when spoken to, absorbed in own world.	Consciousness: Clear, Process: Autistic, Mood/Affect: Blunt, Hallucinatory behavior (+), Instinctual: Hypobulia (+), Psychomotor: Calm.	Clozapine 50 mg (night), Fluoxetine: Postponed, Risperidone 1-0-3 mg, Trihexyphenidyl 2 mg (night).	PTU 2x100 mg, Propranolol 2x10 mg.	-	Persistent hallucinations despite dose adjustment. When the antipsychotic dose was increased, side effects appeared more quickly compared to other regular patients without hyperthyroidism AHRS Score can't be evaluated yet.
Day 9	Sitting on sofa, talking to self, no response to	Consciousness: Clear, Process: Autistic,	Clozapine 50 mg (night),	PTU 2x100 mg,	TMS Session 1 (Auditory	First TMS session administered.

Care Day / Event	Subjective Symptoms	Psychiatric Status Findings	Psychiatric Medication	Internal Medication	TMS Intervention	Clinical Outcome
	speech, compliant with direction.	Mood/Affect: Blunt, Hallucinatory behavior (+), Instinctual: Hypobulia (+), Psychomotor: Calm.	Fluoxetine: Postponed, Risperidone 1-0-3 mg, Trihexyphenidyl 2 mg (night).	Propranolol 2x10 mg.	Hallucination Protocol)	AHRS Score can't be evaluated yet.
Day 11	Talking to self, answers name and location correctly, says she has hyperthyroidism. Reports hearing "Hell" and "God" voices. No suicidal thoughts.	Consciousness: Clear, Process: Autistic, Mood/Affect: Constricted, Auditory Hallucinations (+). Instinctual: Hypobulia (+), Psychomotor: Calm.	Clozapine 50 mg (night), Depakote 250 mg (afternoon), Risperidone 1-0-3 mg, Trihexyphenidyl 2 mg (night).	PTU 2x100 mg, Propranolol 2x10 mg.	TMS Session 3 (Auditory Hallucination Protocol)	Partial response, able to answer some questions but still hallucinating. AHRS Score : 11
Day 15	Talking to self, dancing, lifting legs. Claims to be a doctor and magical. Incoherent speech: "tiang sira, tiang dokter, tiang sakti...".	Consciousness: Clear, Process: Autistic, Mood/Affect: Expanded, Auditory Hallucinations (+). Instinctual: Hypobulia (+), Psychomotor: Calm.	Clozapine 62.5 mg (night), Depakote 250 mg (afternoon), Risperidone 1-0-3 mg, Trihexyphenidyl 2 mg (night).	PTU 2x100 mg, Propranolol 2x10 mg.	TMS Session 5 (Auditory Hallucination Protocol)	Regressed, increased talking to self and grandiosity. AHRS Score : 8
Day 20	Not talking to self. Answers name, family, and history correctly. Recalls hearing water and race noises yesterday but none now. Reports drowsiness and hypersalivation.	Consciousness: Clear, Process: Coherent, Mood/Affect: Expanded, Auditory Hallucinations (-). Instinctual: Hypobulia (+), Psychomotor: Calm.	Clozapine 75 mg (night), Depakote 250 mg (afternoon), Risperidone 0-0-4 mg, Trihexyphenidyl 2x2 mg.	PTU 2x100 mg, Propranolol 2x10 mg.	TMS Session 10 (Auditory Hallucination Protocol)	Significant improvement, hallucinations stopped; side effects: drowsiness and hypersalivation. AHRS Score : 6
Day 30	Talking to oneself. Answers name, family, and history correctly. No aggressive behavior, no drowsiness, and no hypersalivation.	Consciousness: Clear, Process: Coherent, Mood/Affect: Expanded, Auditory Hallucinations (+). Instinctual: Hypobulia (+), Psychomotor: Calm.	Clozapine 75 mg (night), Depakote 250 mg (afternoon), Risperidone 0-0-4 mg, Trihexyphenidyl 2x2 mg.	PTU 1x100 mg, Propranolol 2x10 mg.	-	Able to answer some questions but still talking to oneself sometimes. The PTU dosage is adjusted after 30 days of administration. AHRS Score : 3

Care Day / Event	Subjective Symptoms	Psychiatric Status Findings	Psychiatric Medication	Internal Medication	TMS Intervention	Clinical Outcome
Day 32 (Discharge)	Feels good, sleeping well, appetite good. No more voices or magical thoughts. No more drowsiness or excessive saliva.	Appearance: Normal. Contact: Good. Mood: Euthymic, Affect: Expanded. Thought: Logical, realist, coherent, no delusions. Hallucinations (-). Instinctual: Normal.	Clozapine 75 mg (night), Depakote 250 mg (afternoon), Risperidone 4 mg (night), Trihexyphenidyl 2x2 mg.	PTU 1x100 mg, Propranolol 2x10 mg.	-	Able to answer questions. No talking to self. No aggresivity, no side effect. Discharged for outpatient care. PANSS Total Score : 38 AHRS Score : 0
Outpatient Follow-up 1 (7 days post-discharge)	Self-care good. No hallucinations or delusions. Slight hypersalivation but not bothering patient.	Appearance: Normal. Contact: Good. Mood: Euthymic, Affect: Expanded. Thought: Logical, realist, coherent, no delusions. Hallucinations (-). Instinctual: Normal.	Clozapine 75 mg (night), Depakote 250 mg, Risperidone 4 mg/day, Trihexyphenidyl 2x2 mg.	PTU 1x100 mg, Propranolol 2x10 mg.	-	Stable, continuing medication. PANSS Total Score : 30 AHRS Score : 0
Outpatient Follow-up 2 (1 month post-discharge)	No hallucinations. Hypersalivation gone. Slight morning drowsiness.	Appearance: Normal. Contact: Good. Mood: Euthymic, Affect: Expanded. Thought: Logical, realist, coherent, no delusions. Hallucinations (-). Instinctual: Normal.	Clozapine 50 mg (night), Depakote 250 mg, Risperidone 4 mg, Trihexyphenidyl 2x2 mg.	PTU 1x100 mg, Propranolol 2x10 mg.	-	Stable. Clozapine dose reduced to 50 mg. PANSS Total Score : 30 AHRS Score : 0
Outpatient Follow-up 3 (2 months post-discharge)	No hallucinations, no drowsiness, self-care excellent.	Appearance: Normal. Contact: Good. Mood: Euthymic, Affect: Expanded. Thought: Logical, realist, coherent, no delusions. Hallucinations (-). Instinctual: Normal.	Clozapine 50 mg (night), Depakote 250 mg, Risperidone 4 mg, Trihexyphenidyl 2x2 mg.	PTU 1x100 mg, Propranolol 1x10 mg.	-	Stable. PANSS Total Score : 30 AHRS Score : 0
Outpatient Follow-up 4 (3 months post-discharge)	No hallucinations, no drowsiness, self-care excellent. Patients can socialize and participate in community activities	Appearance: Normal. Contact: Good. Mood: Euthymic, Affect: Expanded. Thought: Logical, realist, coherent, no delusions. Hallucinations (-). Instinctual: Normal.	Clozapine 50 mg (night), Depakote 250 mg, Risperidone 4 mg, Trihexyphenidyl 2x2 mg.	PTU 1x50 mg, Propranolol 1x10 mg.	-	Stable. PANSS Total Score : 30 AHRS Score : 0

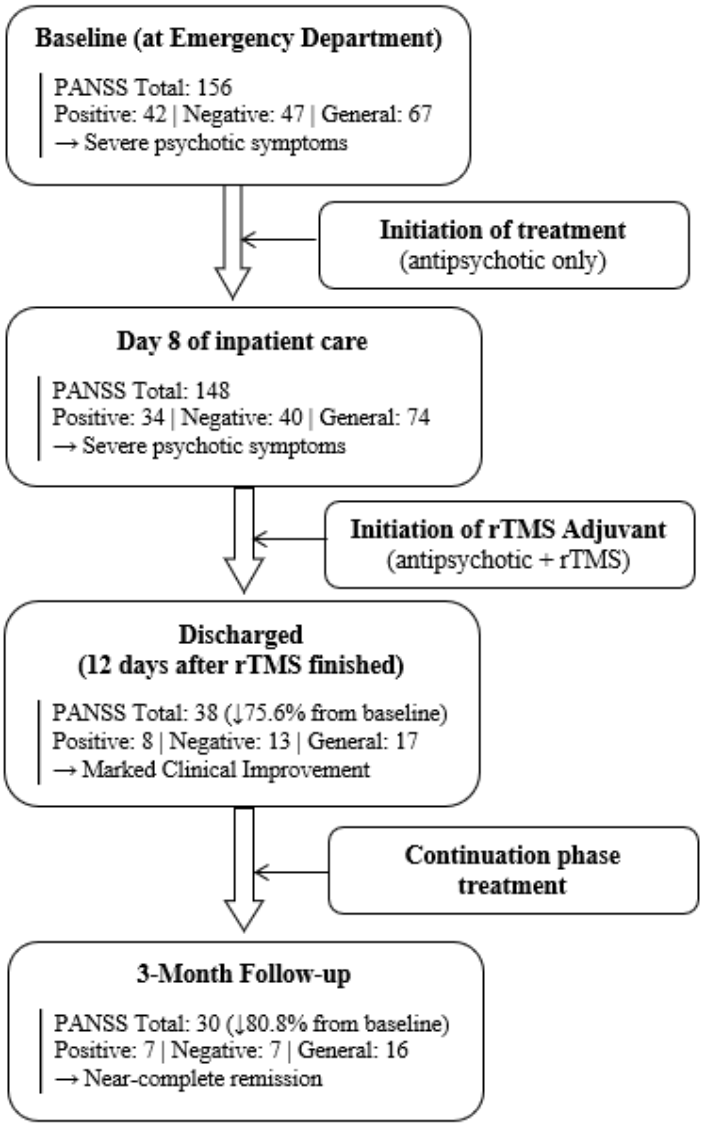

Figure 2. Clinical Course and PANSS Score Trajectory

DISCUSSION

Auditory verbal hallucinations (AVH) are among the most prominent and distressing positive symptoms of schizophrenia, affecting approximately 60–90% of patients and frequently persisting despite adequate antipsychotic treatment[2,3]. Persistent AVH are associated with substantial functional impairment, emotional distress, and increased risk of suicide and aggressive behavior[2,3]. In clinical practice, dose escalation of antipsychotics is often required; however, this approach may be limited by medical comorbidities that increase vulnerability to adverse effects.

Thyroid disorders, particularly hyperthyroidism, significantly complicate the management of schizophrenia due to the critical role of thyroid hormones in modulating dopaminergic, serotonergic, and glutamatergic neurotransmission[7,8]. Patients with hyperthyroidism exhibit increased susceptibility to extrapyramidal symptoms (EPS) during antipsychotic treatment, including tremor, acute dystonia, and parkinsonism[9,10,11]. Parkinsonian manifestations such as sialorrhea may occur as a result of bradykinesia-induced impairment of swallowing reflexes, while subjective weakness or somnolence may

reflect akinesia or generalized motor slowing[9,11].

From a neurobiological perspective, hyperthyroidism is associated with dopaminergic receptor hypersensitivity in the striatum and reduced dopamine turnover[7,8]. When dopamine D2 receptor antagonists are administered, these agents block hypersensitive receptors in a state of relatively low dopaminergic reserve, leading to a pronounced dopaminergic–cholinergic imbalance within the nigrostriatal pathway[8,9]. Consequently, extrapyramidal symptoms may emerge earlier and with greater severity compared to patients with normal thyroid function, thereby limiting pharmacological optimization, as observed in the present case.

Given these pharmacotherapeutic constraints, non-invasive neuromodulation techniques such as repetitive transcranial magnetic stimulation (rTMS) have gained increasing attention as adjunctive treatments for refractory AVH and are increasingly acknowledged in contemporary clinical guidelines, including national treatment recommendations[4,5,19]. rTMS modulates neuronal activity through electromagnetic induction without imposing additional systemic medication burden and is generally well tolerated, making it a rational option in patients with heightened sensitivity to antipsychotic side effects[5].

Low-frequency rTMS protocols for AVH typically target the left temporoparietal junction (L-TPJ), including Wernicke's area, which has been consistently shown by functional neuroimaging studies to exhibit hyperactivity during hallucinatory episodes[3,12]. Stimulation at low frequency (1 Hz) is intended to induce inhibitory effects on abnormal cortical excitability through mechanisms resembling long-term depression (LTD), thereby normalizing disrupted neural connectivity within language-related networks[14,16]. Previous studies have reported that maximal therapeutic response is often achieved after several weeks of treatment, with symptom improvement commonly emerging during the second week and persisting for weeks to months after intervention[6,14].

In the present case, the clinical management followed the standardized protocols for repetitive Transcranial Magnetic Stimulation (rTMS) in schizophrenia but encountered unique physiological challenges. According to established clinical pathways, rTMS is indicated for patients with medication-resistant auditory verbal hallucinations (AVH) who have maintained stable antipsychotic doses for at least 2–4 weeks[1,6]. In our patient, while the diagnostic criteria for treatment-resistant AVH were met, the primary challenge was not just pharmacological resistance but a profound physiological intolerance due to comorbid hyperthyroidism. Existing literature suggests that hyperthyroidism exacerbates dopaminergic system sensitivity, particularly in the striatum, which significantly lowers the threshold for extrapyramidal symptoms (EPS). This case highlights a critical clinical dilemma: while the standard protocol requires dose optimization, our patient developed severe hypersalivation and generalized weakness even at sub-optimal doses. This aligns with the "low dopaminergic reserve" theory in thyrotoxic states, making rTMS not just an adjunctive option, but a necessary alternative to bypass the systemic limitations of pharmacotherapy.

Following the recommended technical parameters, we targeted the Left Temporoparietal Junction (L-TPJ), or Wernicke's area, using a low-frequency protocol (1 Hz)[6,18,19]. This target is strategically chosen to inhibit the cortical hyperactivity associated with hallucination generation. While previous study utilize advanced MRI-navigated localization[6], the use of the standard 10-20 EEG system (midpoint between T3-P3) in this case proved to be highly effective and more feasible for clinical settings in Indonesia. The stimulation was delivered at 100% of the motor threshold in line with the previous study which used 80-

110% of the motor threshold[17,21]. On previous study participant received 14 sessions of rTMS treatment[6] but in this case patient received 10 sessions over two weeks due to healthcare coverage considerations.

Despite the relatively limited number of sessions, the clinical response in this patient exceeded the general expectations found in larger clinical trials. Literature typically indicates that a 25% reduction in PANSS scores signifies a positive treatment response. In our patient, we observed a dramatic reduction in PANSS total scores from **156 to 38 (a 75.6% decrease)** within 10 sessions. This robust response, achieving total resolution of AVH, underscores the efficacy of 1 Hz rTMS in stabilizing dysfunctional neural circuits without the systemic burden of high-dose antipsychotics. Adverse effects were minimal and limited to mild headache and transient hypersalivation, consistent with previous reports regarding the safety profile of rTMS[5,6].

The novelty of this case contributes to the Indonesian psychiatric literature by demonstrating that rTMS can successfully bridge the therapeutic gap in patients where medical comorbidities render conventional pharmacological escalation impossible. It provides a practical model for managing "difficult to treat" cases, suggesting that rTMS should be considered early in the treatment algorithm for patients with systemic vulnerabilities, ensuring both symptom remission and patient safety.

CONCLUSION

This study reports the successful application of low-frequency repetitive Transcranial Magnetic Stimulation (rTMS) as an adjunctive therapy for a schizophrenia patient with auditory verbal hallucinations (AVH) resistant to conventional treatment due to comorbid hyperthyroidism. The uniqueness of this case lies in the therapeutic challenge where hyperthyroidism exacerbates the sensitivity of the dopaminergic system, thereby triggering severe extrapyramidal symptoms (EPS) even at standard antipsychotic dosages. This physiological interaction creates a significant clinical barrier to achieving optimal therapeutic doses through pharmacotherapy alone.

As a clinical pearl for the advancement of psychiatry in Indonesia, this study demonstrates that low-frequency (1 Hz) rTMS targeting the left temporoparietal junction is a safe, effective, and well-tolerated intervention for patients with physical limitations or systemic medical comorbidities. Clinicians are encouraged to consider rTMS as a viable management strategy for "complex cases" where pharmacological dose optimization is hindered by intolerable adverse effects. The integration of neurostimulation technology into multidisciplinary psychiatric practice is expected to establish a new standard in managing persistent psychotic symptoms, while simultaneously improving the quality of life for patients with complex medical profiles in Indonesia. Further studies involving larger samples are recommended to better define its efficacy, safety, and optimal treatment parameters.

DATA AVAILABILITY STATETEMENT

The raw data supporting the conclusions of this case report will be made available by the authors, without undue reservation, upon reasonable request to the corresponding author.

ETHICS STATEMENT

This case report has been processed to obtain review and approval from the Medical Research and Ethics Committee. The authors affirm that the patient has provided written informed consent for participation in this clinical study and for the publication of this case report and any accompanying data. All efforts have been made to ensure the patient's anonymity.

AUTHOR CONTRIBUTIONS

I.G.A.A.D.H: Conceptualization, clinical data collection, and drafting of the original

manuscript. **I.K.A.S:** Clinical supervision, diagnostic validation, and critical review of the manuscript. **S.D & J.P.W:** Literature review and final manuscript formatting. All authors have read and approved the final version of the manuscript.

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