

## CASE REPORT

# A case of severe hyperacusis with neuropsychiatric features: diagnostic challenges in a low-resource setting

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## ABSTRACT

### BACKGROUND:

Differentiating primary psychosis from neuropsychiatric symptoms secondary to sensory-processing disorders is challenging, particularly in resource-limited settings where confirmatory investigations are often unavailable. Misdiagnosis may lead to inappropriate management.

### CASE PRESENTATION:

A 27-year-old male presented with a longstanding history of severe hyperacusis despite normal hearing, episodic formication, and recent brief, non-psychotic visual hallucinations. He also reported contamination obsessions with preserved insight. Symptoms began in adolescence, with progressive intolerance to everyday sounds causing significant distress and functional impairment. A family history of similar sensory symptoms was noted. ENT evaluation confirmed intact hearing, while MRI and EEG were unavailable. Based on clinical phenomenology, a working diagnosis of a primary sensory-processing disorder with secondary neuropsychiatric features was made.

### RESULTS:

The patient was treated with low-dose risperidone (1 mg/day), resulting in partial improvement in visual hallucinations and associated distress. However, core hyperacusis symptoms remained unchanged, supporting a non-psychotic primary pathology.

### CONCLUSION:

This case highlights the importance of careful clinical assessment in distinguishing sensory-processing disorders from primary psychosis in low-resource settings. It underscores the risk of misdiagnosis when perceptual disturbances are interpreted without contextual evaluation. A multidisciplinary approach and improved access to neurodiagnostic tools are essential to enhance diagnostic accuracy and guide appropriate management.

### KEYWORDS:

Hyperacusis; Neuropsychiatry; Resource-limited settings; Sensory processing disorder

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## INTRODUCTION

Hyperacusis, a condition of reduced sound tolerance, often leads to significant functional impairment and psychological distress<sup>1,2</sup>. When co-occurring with somatic sensations (e.g., formication), obsessive traits, and perceptual disturbances, it creates a diagnostic puzzle at the interface of neurology and psychiatry<sup>3,4</sup>. In such presentations, there is a high risk of misattributing symptoms to a primary psychotic disorder like schizophrenia, potentially leading to inappropriate long-term antipsychotic therapy<sup>5,6</sup>.

Accurate differentiation requires a thorough evaluation, often including neuroimaging and neurophysiological studies. However, in many healthcare contexts, significant barriers to accessing these investigations exist. This case report describes the presentation and management of a complex sensory-neuropsychiatric case, explicitly highlighting the diagnostic and ethical dilemmas posed by the unavailability of confirmatory tests.

## METHODS

### Case Presentation

27-year-old male with no prior psychiatric history presented with a multifaceted syndrome dominated by sensory hypersensitivity. Since adolescence, the patient reported debilitating intolerance to everyday sounds (e.g., footsteps, traffic), describing them as painfully loud and leading to exhaustion and transient weakness.

**Somatic Sensory Disturbance:** For five years, he experienced episodic "crawling" sensations under his skin, worsening during harmattan seasons. Notably, a sibling reported identical sensations, suggesting a possible hereditary component<sup>7</sup>. **Obsessive Traits:** He exhibited marked contamination fears and cleaning rituals, which he recognized as excessive and distressing (ego-dystonic).

Three months pre-presentation, he began experiencing brief (seconds), fully formed visual hallucinations (e.g., "a person in the sky") approximately twice monthly. No auditory hallucinations, delusions, formal thought disorder, or negative symptoms were present.

### Mental Status Examination

The patient was cooperative and well-groomed but visibly anxious in response to ambient noise. Mood was euthymic, affect was reactive. Thought process was linear and goal-directed. He demonstrated partial insight, acknowledging his contamination fears as unreasonable. Cognition was grossly intact.

### Investigations

**Available:** Routine blood tests (CBC, metabolic panel) were within normal limits. Otolaryngological evaluation confirmed intact hearing acuity via pure-tone audiometry.

**Pending/Unavailable:** Neurological investigations, including brain MRI and electroencephalogram (EEG), were requested but remained inaccessible due to systemic resource limitations and cost constraints. This is a common scenario in our setting that directly impacts diagnostic certainty and management timelines<sup>8</sup>.

### Diagnostic Considerations and Working Formulation

In the absence of definitive investigative evidence, our diagnosis relied on clinical syndromic aggregation and exclusion.

**Primary Working Diagnosis:** Complex Sensory Processing Disorder. This formulation integrates:

**Central Hyperacusis:** Severe sound intolerance with intact peripheral hearing, pointing towards central auditory or limbic system dysfunction<sup>1,9</sup>.

**Probably Familial Small-Fiber Neuropathy Phenotype:** The familial, weather-exacerbated formication suggests a sensory neuropathic basis rather than a tactile hallucination<sup>7</sup>.

**Secondary Neuropsychiatric Symptoms:** Subthreshold OCD: Contamination obsessions are frequently comorbid with sensory hypersensitivity<sup>10</sup>.

**Simple Visual Hallucinations:** Their isolated, brief, and non-elaborated nature is more consistent with sensory-perceptual phenomena seen in migraine or sensory overload states than with psychotic disorders<sup>6,11</sup>.

Key Psychiatric Differential Excluded: Schizophrenia was deemed unlikely due to the absence of core psychotic features (delusions, thought disorder), preserved global functioning, and the primacy and chronicity of sensory symptoms.

### Management and Outcome

Faced with significant patient distress and functional impairment, a decision was made to initiate a therapeutic trial despite incomplete diagnostics. Low-dose risperidone (1 mg daily) was chosen for its potential to modulate perceptual and affective components of distress<sup>12</sup>. At four-week follow-up: Visual hallucinations and distress from formication were significantly reduced. Hyperacusis remained unchanged, consistent with its putative central neurological basis, which is typically unresponsive to antipsychotics<sup>1, 9</sup>. No adverse effects were reported. The need for eventual neurological evaluation was reiterated to the patient and family.

**Ethics Approval:** Ethics approval was not required for a single descriptive case report according to the institutional policy of the Federal Neuropsychiatric Hospital, Kware, Sokoto, Nigeria. Written informed consent was obtained from the patient for publication of this case report.

### DISCUSSION

This case illustrates the profound challenge of practicing precision neuropsychiatry when diagnostic resources are scarce. The intact hearing finding is pivotal; it rules out peripheral causes for the hyperacusis and strengthens the argument for a central sensory-processing abnormality<sup>1,9</sup>. The positive family history of formication further anchors the presentation in a potential neuropathic framework<sup>7</sup>. The decision to treat with risperidone was pragmatic, targeting the most distressing secondary symptoms (hallucinations, anxiety). The observed response pattern—improvement in psychiatric symptoms but not in core sensory dysfunction—validates the clinical hypothesis of a secondary, reactive component superimposed on a primary sensory disorder<sup>12</sup>.

The core dilemma remains: without an MRI or EEG, we cannot definitively exclude structural abnormalities,

silent seizures, or other neurological conditions that could mimic this presentation<sup>11,13</sup>. This forces reliance on longitudinal follow-up and clinical re-evaluation as the primary diagnostic tools.

### Limitations

The most significant limitation of this report is the absence of key neurological investigations (MRI, EEG) at the time of writing. This reflects a real-world constraint in our practice setting but necessitates caution in interpreting the working diagnosis. The conclusions are therefore based on clinical reasoning rather than objective confirmation.

### CONCLUSION

This case highlights that in resource-limited settings, clinicians must often navigate diagnostic uncertainty. It demonstrates a rational clinical approach to formulating a working diagnosis based on phenomenology, available data (like intact hearing), and careful exclusion of primary psychiatric disorders. It underscores the critical importance of advocating for better access to neurodiagnostic services to improve care for patients with complex sensory-neuropsychiatric conditions. Management should focus on a multidisciplinary approach, symptom-targeted treatment, and ongoing re-assessment.

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AI-assisted tools (Grammarly) were used for grammar and language editing. All clinical content, analysis, and conclusions are the sole work of the authors.

### CONFLICT OF INTEREST

None declared

### AUTHORS' CONTRIBUTIONS

Zubairu Umar: Conception, data acquisition/analysis, manuscript drafting. Abubakar B. Sulaiman: Data analysis, critical revision. Junaidu Sarki: drafting support. Abdulaziz H. Ibrahim: resources support

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