Case report

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Auditory and visual hallucinations in an adolescent following orthotopic liver transplantation

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Introduction

A hallucination is a perception that occurs without an external stimulus to the relevant sensory organ. A pseudo-hallucination is a sensory experience that falls short of the definition of a hallucination in that it either appears in a subjective space or lacks a sense of reality (1). The lifetime prevalence of auditory hallucinations in children at 12.7% and adolescents at 12.4% have been found in a meta-analysis (2). Hallucinatory/pseudo-hallucinatory experiences in children have been described in many non-psychotic disorders, including anxiety disorders, stress-induced states, conduct disorders, substance use disorders, organic states such as delirium and epilepsy, and sometimes in healthy individuals (3,4).

Liver transplantation (LT) has enhanced the expectancy and the quality of life among many. It has reached a high efficacy as a cure for medically incurable liver diseases in children (5). It involves a team of experts representing numerous clinical disciplines, including paediatricians/paediatric hepatologists, transplant surgeons, anaesthetists, and other health professionals. Colombo North Centre For Liver Diseases in Ragama, Sri Lanka, is the pioneering institution for paediatric liver transplantation in Sri Lanka and has initiated this process amidst crisis situations, yet progressing well (6). A liver transplant is not just a surgery but rather a process of medical treatment over time, which is psychologically challenging to children. Hence, child and adolescent psychiatrists also play a crucial role during preparation and after the LT. A preoperative evaluation includes assessing the possible aetiology of liver failure with a bearing on mental health, which would lead to poor long-term outcomes if not effectively managed (7). Preoperative adjustment, anxiety, and capacity to consent to the procedure should also be dealt with effectively. The post-transplant period has psychiatric and psychosocial issues, including delirium, post-transplant anxiety, depression, dysthymia, adjustment disorder, brief psychosis, post-traumatic stress disorder, and paradoxical psychiatric syndrome (8).

Despite increased knowledge of psychosocial sequelae experienced post-liver transplant, observations made in child and adolescent populations appear limited, especially in the local setting. We are reporting a 14-year-old Sri Lankan girl presenting with pseudo-hallucinations in the post-liver-transplant period, and the aim is to increase the awareness of such presentations and highlight possible pitfalls in clinical management.

Case report

A 14-year-old schoolgirl was referred to the child and adolescent mental health team due to an acute onset change in behaviour following liver transplant surgery. She required a liver transplant due to established cirrhosis caused by autoimmune hepatitis. She had undergone LT surgery 13 days before the development of the behavioural changes. She received a living donor liver transplant from a Buddhist priest who donated due to altruistic reasons. The child was on Tacrolimus and Mycophenolate mofetil as immunosuppressives.

She gradually recovered from the liver transplant surgery and developed fear and apprehension around the tenth post-op day. She had disturbed sleep with intermittent awakenings. She would wake up repeatedly screaming to see a figure dressed in a black robe walking toward her along the hospital corridor. During the daytime and wide awake, she complained of seeing a figure standing beside her bed. She heard the voice of her dead grandmother urging her to die and leave this world with her. She stated that the dark figure beats her with a metal rod during sleep, causing generalised body aches and pains when she wakes up. She would appear fearful throughout the night, noted to be hyper-vigilant and have palpitations and excessive sweating.

She was preoccupied with these frightening experiences and generalised body aches. She expressed concerns regarding the well-being of her younger brothers and insisted on video-calling or meeting with them to

reassure herself regarding their safety. She expressed ideas of guilt and burdening her family due to the treatment of her illness. She was sad that her mother had to stay in the ward and support her care while away from her younger brothers. She was doubtful regarding the success of the liver transplant and was somewhat reluctant to undergo further investigations or procedures. She complained of a lack of energy, easy fatigability, and feeling persistently low, and appeared pessimistic regarding her future. Her oral intake was limited to fluids and semi-solids, but a reduction in appetite was not noted. She enjoyed the presence and the visits of her family and friends and assisted her mother during self-care routines. She enjoyed and smiled when speaking to her brothers over the phone.

During episodes of behaviour change, she was alert and oriented in time, place and person and remained afebrile with no biochemical derangements suggestive of delirium. Her surgical wounds were clean and healing satisfactorily. The child and adolescent psychiatrist had evaluated her preoperatively, and she was psychologically well-adjusted before the surgery. She had no history of episodic behaviour change or family history of mental illness among first-degree relatives. This adolescent lacked applicable coping mechanisms for stress and did not routinely perform relaxation activities. She was generally a worrying person, easily affected by minor psychosocial challenges. She denied any significant childhood adversities.

In the mental state examination performed by a consultant child and adolescent psychiatrist, she appeared distressed and teared up occasionally during the interview. Her speech was reduced in spontaneity, rate, amount and volume but remained relevant and coherent. Her mood was anxious, and she expressed fear, ranging from anxiety to irritability. Her mood remained congruent with her thought content. Her thoughts revealed preoccupations with somatic complaints, a bleak, pessimistic view of her future and ideas of guilt. She feared that she would not recover from her ailment and would not achieve a reasonable level of functioning despite medical management. She believed she was burdening her family, and her younger brothers were in danger. These beliefs were not of delusional intensity. There were no suicidal, hostile, homicidal ideations, obsessions, or delusional ideas. In perceptions, pseudo-auditory and pseudo-visual hallucinations were found, and these were experienced in clear consciousness in the subjective space. Her insight was partial as she did not acknowledge these symptoms having psychological causation but was willing to accept mental health treatment.

Intelligence assessment revealed scores within the normal range. Biochemical and ultrasound evaluations of the liver functions improved and could not explain her acute behaviour change. Thyroid, renal, and glycaemic values and inflammatory markers were also normal.

Adjustment disorder with mixed anxiety and depressed mood was diagnosed according to the DSM-5 criteria. The girl was managed with psychoeducation, supportive psychotherapy, deep breathing relaxation therapy and activity scheduling. Also, she was prescribed a short course of Sertraline at 12.5 mg mane for a month. She responded well and was symptom-free within a few weeks of initiating treatment. She remained psychologically stable for three months following the surgery. Informed written consent was obtained from the patient and her parents for the assessment and publication.

Discussion

We reported a 14-year-old girl presenting with pseudo-auditory and pseudo-visual hallucinations in the post-op recovery period of a liver transplant. A diagnosis of adjustment disorder with mixed anxiety and depressed mood was given and managed successfully with psychotherapeutic and psychopharmacological measures. Hallucinations following liver transplantation have been reported earlier in adults (9). Post-operative hallucinations are more likely to be visual and, are known to be caused by delirium, immunosuppressive medications, and are associated with other neuropsychiatric symptoms (10-12).

Auditory hallucinations are described in various psychopathological and social circumstances in children and adolescents. The presence of hallucinations does not indicate a diagnosis of a psychotic disorder (3). In the continuum model of psychosis, it is considered that auditory hallucinations are not limited to psychosis but are also seen in healthy individuals (13). In a study among 5-12-year-old children in France, among those who reported having auditory hallucinations, more than half recovered fully in three months, and they all were diagnosed with anxiety disorders as in the described child (14). Hallucinations persisted for over 12 months in one-third; all were diagnosed with conduct disorder, and none with psychotic disorders. Further, childhood sexual and emotional trauma are associated with non-psychotic auditory hallucinations in later life (15).

Australian researchers found that hallucinating children had significantly higher mean anxiety, depression and re-experiencing phenomena than controls (16). The ability to distinguish between externally or internally generated sources of information is affected, and elevated levels of emotional distress reduce effective reality monitoring (16). The misattribution of a traumatic memory as an externally generated one may lead to hallucinatory experiences. The described adolescent was diagnosed with significant post-operatively anxiety, which likely affected her reality monitoring, leading to auditory and visual hallucinations. The existence of maladaptive coping strategies is related to experiencing hallucinations while under stress, and the reported girl lacked adaptive coping skills (17).

In relevance to hallucinatory experiences in children and adolescents, it is important to consider alternatives to psychosis in all situations. Caution should be exercised before the prescription of antipsychotics, and a detailed clinical assessment needs to be conducted by a child mental health specialist. In the reported adolescent, evaluation for anxiety, the context of symptoms, coping styles, and targeted management helped avoid unnecessary prescriptions of antipsychotics that may have affected the transplanted liver. Precautions must be taken when prescribing antipsychotics following liver transplantation, as most antipsychotics are metabolised by the cytochrome P450 enzymes (18). This case report highlights the importance of considering anxiety and mood abnormalities in children and adolescents presenting with hallucinations and practising discretion in prescribing psychotropics.

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Statement of contribution

MC: Writing and revisions of the initial draft, clinical assessments

MA: Writing of the initial draft, clinical assessments

PS: Writing of the initial draft, clinical assessments

KK: Literature review, clinical assessments

MF: Revisions of the initial draft, clinical assessments

Declaration of interests

The authors declare that there is no financial or non-financial conflict of interest.

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References

1. Harrison P, Cowen P, Burns T, Fazel M. Shorter Oxford Textbook of Psychiatry. 2017.

2. Maijer K, Begemann MJH, Palmen SJMC, Leucht S, Sommer IEC. Auditory hallucinations across the lifespan: a systematic review and meta-analysis. Psychol Med [Internet]. 2018 Apr 1 [cited 2022 May 12]; 48(6): 879-88. Available from: https://pubmed.ncbi.nlm.nih.gov/28956518/

3. Perera H, Attygalle U, Jeewandara C, Jayawardena V. Non-psychotic auditory hallucinations in children and adolescents. Sri Lanka Journal of Psychiatry [Internet]. 2011 Jun 29 [cited 2022 May 12]; 2(1): 9. Available from: http://sljpsyc.sljol.info/articles/10.4038/sljpsyc.v2i1.3159/

4. Dominguez MDG, Garralda ME. Assessing and managing hallucinations in children and adolescents. BJPsych Advances [Internet]. 2016 Nov [cited 2022 May 12]; 22(6): 380-90. Available from: https://www.cambridge.org/core/journals/bjpsych-advances/article/assessing-and-managing-hallucinations-in-children-and-adolescents/9DFC17F7B788E4DA68455B51B4B7FF88

5. de Ville de Goyet J, Baumann U, Karam V, Adam R, Nadalin S, Heaton N, et al. European Liver Transplant Registry: Donor and transplant surgery aspects of 16,641 liver transplantations in children. Hepatology [Internet]. 2022 Mar 1 [cited 2022 May 12];75(3):634-45. Available from: https://onlinelibrary.wiley.com/doi/full/10.1002/hep.32223

6. Siriwardana R, Thilakarathne S, Fernando M, Gunetilleke MB, Weerasooriya A, Appuhamy C. First paediatric live donor liver transplant in Sri Lanka with 1-year outcome: challenges for the future. Sri Lanka Journal of Surgery [Internet]. 2021 Nov 30 [cited 2022 May 15]; 39(3): 33. Available from: http://sljs.sljol.info/articles/10.4038/sljs.v39i3.8901/

7. Medved V, Medved S, Hanzek MS. Transplantation Psychiatry: an Overview. Psychiatr Danub [Internet]. 2019 Mar 1 [cited 2022 May 13];31(1):18-25. Available from: https://europepmc.org/article/med/30948685

8. Grover S, Sarkar S. Liver Transplant – Psychiatric and Psychosocial Aspects. Journal of Clinical and Experimental Hepatology [Internet]. 2012 [cited 2022 May 13]; 2(4): 382. Available from: /pmc/articles/PMC3940381/

9. Nåden D, Bjork IT. Patients' experiences in hospital following a liver transplantation. Scandinavian Journal of Caring Sciences [Internet]. 2012 Mar 1 [cited 2022 May 14]; 26(1): 169-77. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/j.1471-6712.2011.00911.x

10. Ottens TH, Sommer IEC, Begemann MJ, Schutte M, Cramer MJ, Suyker WJ, et al. Hallucinations after

Cardiac Surgery: A Prospective Observational Study. Medicina 2020, Vol 56, Page 104 [Internet]. 2020 Mar 2 [cited 2022 May 14]; 56(3):104. Available from: https://www.mdpi.com/1648-9144/56/3/104/htm

11. Weber P, Ruof H, Jourdan S. [Differential diagnosis of visual hallucinations]. Klinische Padiatrie [Internet]. 2005 Jan 1 [cited 2022 May 14];217(1):25-30. Available from: https://europepmc.org/article/med/15640968

12. Gangeri L, Bosisio M, Brunelli C, Tamburini M, Serafin P, Clerici CA, et al. Phenomenology and Emotional Impact of Neuropsychiatric Symptoms in Orthotopic Liver Transplant for Hepatocellular Carcinoma. Transplantation Proceedings. 2007; 39(5): 1564-8.

13. Badcock JC, Hugdahl K. Cognitive mechanisms of auditory verbal hallucinations in psychotic and non-psychotic groups. Neuroscience and Biobehavioral Reviews. 2012 Jan 1; 36(1): 431-8.

14. Askenazy FL, Lestideau K, Meynadier A, Dor E, Myquel M, Lecrubier Y. Auditory hallucinations in pre-pubertal children. European Child and Adolescent Psychiatry 2007 16: 6 [Internet]. 2007 Apr 28 [cited 2022 May 15]; 16(6): 411-5. Available from: https://link.springer.com/article/10.1007/s00787-006-0577-9

15. Daalman K, Diederen KMJ, Derks EM, van Lutterveld R, Kahn RS, Sommer IEC. Childhood trauma and auditory verbal hallucinations. Psychological Medicine [Internet]. 2012 Dec [cited 2022 May 15];42(12):2475-84. Available from: https://www.cambridge.org/core/journals/psychological-medicine/article/abs/childhood-trauma-and-auditory-verbal-hallucinations/BDBF53626FA94620528359EEE87217DB

16. Mertin P, O'Brien N. High emotional arousal and failures in reality monitoring: Pathways to auditory hallucinations in non-psychotic children? Scandinavian Journal of Psychology [Internet]. 2013 Apr 1 [cited 2022 May 15]; 54(2): 102-6. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/sjop.12019

17. de Leede-Smith S, Barkus E. A comprehensive review of auditory verbal hallucinations: Lifetime prevalence, correlates and mechanisms in healthy and clinical individuals. Frontiers in Human Neuroscience. 2013 Jun 25; 0(JUN): 367.

18. Bardenshtein LM, Enikeev I, Shcherbakova IV, Tsygankov BD, Boev IV, Aleshkina GA. Olanzapine in treatment of a schizophrenic patient with orthotopic liver transplant. Medical News of North Caucasus. 2017; 12(3): 339-41.