

Treatment in Psychiatry begins with a hypothetical case illustrating a problem in current clinical practice. The authors review current data on prevalence, diagnosis, pathophysiology, and treatment. The article concludes with the authors' treatment recommendations for cases like the one presented.

Hallucinations in Children and Adolescents: Considerations in the Emergency Setting

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atric emergency service for children who present with hallucinations?

A 9-year-old boy with escalating behavioral problems was brought to a psychiatric emergency service. His mother described him as disrespectful to her and other adults with episodes of cursing and screaming that last for hours. He was reported to have recently kicked his pregnant sister and vandalized the house of a neighbor he dislikes. He has been taking 5 mg b.i.d. of oral methylphenidate, which was prescribed by a primary care doctor. The emergency service intake worker reported that the boy claimed to hear voices that tell him to do bad things and claimed to see ghosts. He admitted to having an explosive temper when "people mess with me," and he said that he sometimes "goes crazy." He said that he often thinks of his deceased grandmother.

A 7-year-old girl who was evaluated 2 days earlier at a children's hospital and medically cleared was brought to the psychiatric emergency service by her mother, who reported that her daughter claims to feel bugs and mice crawling over her and that during those episodes she screams and is inconsolable. The mother, the patient, and a 12-year-old sister have been living in a shelter. The patient appeared to be anxious and to have poor control of her behavior and low tolerance for frustration. She admitted that she has tactile hallucinations and obsessive thoughts of cleanliness. Her mother said that the girl is also hyperactive and restless at school.

Should the hallucinations in these children be equated with psychosis? What is the differential diagnosis of hallucinations in children, and what is the prognosis for children with hallucinations? What interventions are indicated in the psychi-

Nonpsychotic Hallucinations in Children

Hallucinations, particularly as described in the adult psychiatric literature, have been viewed as synonymous with psychosis and as harbingers of serious psychopathology. In children, however, hallucinations can be part of normal development or can be associated with nonpsychotic psychopathology, psychosocial adversity, or a physical illness (1). The first clinical task in evaluating children and adolescents is to sort out the most serious and worrisome hallucinations from those that are less pathological.

Hallucinations can be defined as perceptions in the absence of identifiable external stimuli, excluding eidetic images and imaginary companions. In the Schedule for Affective Disorders and Schizophrenia for School-Age Children, Present Episode Version (K-SADS) (2), additional parameters regarding hallucinations are specified. For example, there must be clear consciousness, thus eliminating febrile, delirious states or the influence of psychoactive substances. An eidetic image or an imaginary friend is classified in the K-SADS as a "hallucination-like phenomenon." Hallucinations are further categorized as 1) nondiagnostic auditory hallucinations that, in adults, have little psychopathological importance, such as hearing footsteps, knocking, or one's name and 2) "diagnostic auditory hallucinations [that] include experiences of hearing one or more voices saying at least one word other than one's own name."

The term "psychosis" has had numerous definitions, the narrowest being delusions or prominent hallucinations in the absence of insight (DSM-IV-TR). Other definitions include the positive symptoms of schizophrenia such as disorganized speech, disorganized or catatonic behavior, loss of ego boundaries, and impaired reality testing. DSM-IV-TR does not address the clinical phenomenon of nonpsychotic hallucinations in children. Accordingly, Garralda's concept (3) of nonpsychotic hallucinations in children is used in this article. In children with nonpsychotic hallucinations, the following symptoms of psychosis are absent: delusional beliefs, disturbed language production, decreased motor activity, signs of incongruous mood, bizarre behavior, and social withdrawal.

Wiling and Paoli (4) described their experience with 42 children with nonpsychotic hallucinations who were seen at the Harlem Hospital Clinic. They found a pattern of developmental difficulties, social and emotional deprivation, parents whose own pathology promoted a breakdown in the child's sense of reality, poor boundaries, and cultural and environmental beliefs in mysticism. The psychodynamic content of the hallucination was understood in terms of the child's own conflicts and the family psychopathology. Three and one-half decades later, Edelsohn et al. (5) examined the association between the content of auditory hallucinations and diagnostic categories in 62 nonpsychotic children seen during a 2-month period in a psychiatric emergency service. Nonpsychotic hallucinations are thus not a rare phenomenon. Auditory hallucinations of voices telling the child to do bad things were more often associated with disruptive behavior disorders (69%) than with all other diagnostic categories combined (31%). Hearing a voice invoking suicide was more often associated with depression (82%) than with all other diagnostic categories (18%). Thus, the content of the hallucination may be relevant in understanding the underlying psychopathology and issues in the child's development. Bereaved children who had hallucinations that reflect unresolved mourning of a parent have been described; such children need developmentally appropriate emotional and cognitive support (6).

“Caution the family that the evolution of prodromal symptoms into a disorder may not occur for several years.”

Differential Diagnosis

The differential diagnosis of hallucinations comprises a range of psychiatric disorders, including 1) clinical diagnoses where hallucinations are not necessarily the hallmark feature, but may be viewed as comorbid or associated symptoms, such as disruptive disorders and anxiety disorders; 2) psychiatric disorders that are typically defined by psychotic features, such as schizophrenia, major depressive disorder with psychotic features, and bipolar disorder with psychotic features; and 3) prodromal and at-risk clinical states. In addition, organic, nonpsychiatric disorders may present with hallucinations. Finally, parents may confuse children's night terrors and illusions with hallucinations. Parents may be concerned that hallucinations are present in children who tend to stare off into space at night, scream in the midst of a night terror, or misperceive curtains, shadows, and bedroom furniture as frightening objects in a dark room.

Hallucinations in children have been noted in bereavement situations where the surviving parent is emotionally unavailable (6), in anxious low-functioning children (7), and in the face of psychosocial adversity and family psychopathology (4). In a preliminary retrospective study of hallucinations in children by Garralda (3), the children were described as having emotional or conduct disorders. Among 62 nonpsychotic children with hallucinations seen

in a psychiatric emergency service, the following diagnoses were represented: depression (34%), attention deficit hyperactivity disorder (ADHD) (22%), and disruptive behavior disorder (12%) (5).

In assessing preschool and early school-age children, the presence of benign phobic hallucinations should be considered. Benign phobic hallucinations—which are visual and tactile, anxiety related, present at night, and self-limited—have been reported to occur only in this age group (8).

When considering the diagnoses of schizophrenia spectrum disorders and mood disorders with psychotic features, the clinician must rule out substance abuse and other medical causes of hallucinations. Hallucinogenic substances include cannabis; LSD; cocaine; amphetamines, including Ecstasy (3, 4-methylenedioxymethamphetamine); opiates; and barbiturates. When PCP (“angel dust” or phencyclidine) is taken in addition to cannabis, the risk for psychotic symptoms is increased. Medications that can precipitate hallucinations include steroids and anticholinergic medications. Use of methylphenidate has been associated with visual and tactile hallucinations, although this phenomenon is not common (10).

The physical disorders that can cause hallucinations include thyroid and parathyroid disease, adrenal disease, Wilson's disease, beriberi, electrolyte imbalance, and porphyria. Serious infections such as meningitis, encephalitis, or febrile illness may precipitate hallucinations. Migraines have been associated with different types of hallucinations, although visual hallucinations are the most common (11). Hallucinations have been reported to occur both during the migraine attack and in the absence of headache. Seizure disorders should be considered in the differential diagnosis, although hallucinations are not commonly caused by epilepsy. During seizures, hallucinations may include unformed images (flashing lights), formed images, spoken words, or music (12). Olfactory hallucinations may occur during complex partial seizures. The aura—the period of the seizure that occurs before loss of consciousness—may include hallucinations that are often described as dreamlike or as flashbacks. They come from the temporal lobe. Visual hallucinations with accompanying eye or head movements may be seen in the context of occipital lobe tumors. On the other hand, if nonmigraine headaches occur along with the hallucinations, the suspicion of a neurological cause should be raised. For instance, complex hallucinations or full images can occur in the context of neoplasms that involve the optic nerve or retina.

Prognosis for Children With Hallucinations

Longitudinal studies that have tracked the outcome for children who experience hallucinations have included various populations, settings, and methods, and, accordingly, have had a wide range of findings. In a follow-up study

spanning an average of 17 years and involving 20 children with hallucinations and concurrent emotional or conduct problems, Schreier (1) found that hallucinations were not a significant predictor of outcome at a mean age of 30 years, although 50% of the subjects continued to have hallucinations. Childhood hallucinations did not increase the risk for psychoses, depression, organic brain disorder, or other psychiatric illnesses. In a 2–8-year follow-up study of 26 children with psychosis and disruptive behavior disorders, Nicolson et al. (13) found that about 50% of the subjects met criteria for major depressive disorder, bipolar disorder, or schizoaffective disorder at follow-up. Poulton et al. (14) conducted a 15-year longitudinal birth cohort study and found that self-reported psychotic symptoms (delusional beliefs and hallucinatory experiences) at age 11 years predicted a high risk of schizophreniform disorder at age 26 years (odds ratio=16.4).

Escher and colleagues (15) prospectively studied factors that might be associated with the formation of delusions in adolescents with auditory hallucinations. At the 3-year follow-up, 50% needed care and 16% had delusional ideation during at least one of the three follow-up points. The role of attributions—how the adolescents thought of the power of the voices and where they came from—was strongly associated with the formation of delusions.

A Biopsychosocial Framework for Understanding Hallucinations

A biopsychosocial framework is critical in both the evaluation and treatment of childhood hallucinations in the psychiatric emergency service. Biological causes must be sought, as outlined in the differential diagnosis. Psychological factors include grief, attempts to attribute maladaptive behavior to a voice (“the bad voice told me to hit someone”), depressive ideation (suicidal voices, voices or visions of deceased relatives/friends), and emotional longing (the comforting voice of a deceased relative/friend). Cultural factors include religious beliefs with an emphasis on spirits and family acceptance of hallucinations. The biopsychosocial framework directs the clinician’s attention to etiological factors and to precipitating, perpetuating, and protective factors (individual and family strengths) that will guide the specifics of intervention.

Interventions in the Emergency Setting

The treatment of youths presenting with hallucinations in the psychiatric emergency service should be guided by a careful evaluation and differential diagnosis. The workup must include ruling out substance ingestions and medical and neurological causes. Hallucinations must be evaluated in the context of other features of psychosis, such as onset, frequency, severity, and chronicity. It is critical to identify underlying psychopathological, psychosocial, and cultural factors. Contact with key adult informants can be made by telephone by a member of the clinical emergency staff such as a social worker or case manager. Efforts should be made to obtain consent for re-

lease of information; however, in emergency situations formal releases should not stand as a barrier for critical information benefitting the care of the patient. The clinician needs to decide whether the hallucinations are psychotic or nonpsychotic. The evaluation of the underlying conditions will direct selection of the type of psychosocial interventions and medications needed, if these treatments are indicated. For example, hallucinations in nonpsychotic children with underlying diagnosis of depression, anxiety, or posttraumatic stress disorder suggest the need for a course of psychotherapy and possibly an antidepressant. Antipsychotic medication should not be routinely initiated in patients whose hallucinations are not psychotic but are comorbid with a nonpsychotic psychiatric disorder. Safety considerations take priority in cases where the child has acted or is at high risk for acting on dangerous hallucinations. Risk factors for suicidality should be covered in the evaluation. Continued observation in the emergency service, initiation of appropriate medications, and hospitalization may be indicated for hallucinating children who require acute intervention.

If the hallucinations are part of a clinical picture of psychosis, early identification and treatment are indicated. Duration of untreated psychosis has been found to be an important predictor of prognosis and treatment response (16, 17). Whether to institute antipsychotic medications in patients in the prodromal phase of psychotic illness or who are at-risk for psychosis is an area of continuing debate. Medication trials and cognitive behavior therapy (CBT) trials with the objective of reducing the transition to psychosis have been conducted. Low-dose risperidone and CBT were found to be superior to case management and supportive psychotherapy after 6 months of treatment, but this advantage was not maintained after 6 months of follow up (18). A prodromal trial of olanzapine was successful in reducing the conversion to psychosis to 25%, compared to the follow-along group rate of 50% (19). In a study comparing a trial of CBT to monitoring without intervention in patients described as being at ultrahigh risk, CBT was found to significantly reduce the rate of conversion to psychosis after adjustment for age, gender, family history, and baseline Positive and Negative Syndrome Scale score (20).

On the basis of the research of Escher et al. (15), who found that adolescents’ own interpretations of their hallucinations were important in the evolution of their psychopathology (15), I have utilized and recommend CBT (either with and without medication) as a brief intervention in the emergency setting. The clinician’s initial goal in CBT is to gain an appreciation of the patient’s beliefs about the hallucinations by asking the child what he or she thinks the hallucinations mean, how they started, and whether he or she can start or stop the voices or visual hallucinations. Helping the patient identify alternative explanations for the hallucinations and introducing coping strategies are the next steps (21). CBT can benefit youths with nonpsychotic hallucinations or can be used along with medication in patients with psychosis. A detailed description of CBT

for psychosis is beyond the scope of this article; the reader is referred to the literature on this subject (22–23).

Conclusions

It was learned that the 9-year-old boy in the first vignette sometimes left home without permission and returned after dark. No evidence of substance ingestion was found, and there was no family history of psychotic illness. In the clinical interview, the boy described frequent fighting with his brother and revealed that his parents often called him names, such as idiot, bastard, and moron. He denied suicidality or depressed mood. He made good eye contact, showed no evidence of bizarre or psychotic behavior, and appeared oriented, with above-average cognitive functioning, but he often behaved impulsively. The patient reported that he feels bullied at school and home. His school problems and conflict with authority, coupled with anger that his pregnant sister has been getting more attention than he has been, appeared to have fueled his oppositional behavior and aggression. He said that he misses his grandmother, whom he felt defended him at home, and that he feels comforted by her voice. The voice telling him to do bad things may be understood in a number of ways. For example, it may be an expression of his internal battle with his conscience in the face of poor impulse control, or it may represent an attempt to place the blame for negative behavior on someone other than himself in the hope of avoiding punishment. The clinical picture was consistent with ADHD and oppositional defiant disorder with nonpsychotic hallucinations. He was referred to the hospital diversion program, a multidisciplinary outpatient program in which staff make home and school visits and provide short-term psychosocial interventions and pharmacotherapy. It was believed that he and his family would benefit from prosocial behavioral interventions, along with better management of his stimulant medication.

During the evaluation of the 7-year-old girl in the second vignette, additional stressors and precipitants to her tactile hallucinations unfolded. In the past 2 months before coming to the emergency service, the girl and her mother had stayed at four different shelters. Three days before coming to the emergency service, there was a fire drill at the shelter. The patient had a nightmare that evening. In her nightmare, three men were trying to kill her mother by cutting off her fingers. After the patient returned to sleep, she woke up screaming that bugs and mice were crawling on her. The tactile hallucinations returned the following night. According to her mother, the present shelter was clean but previous ones had been infested with millipedes. The mother reported that she had emphasized with her daughter the need for careful hygiene in the shelters, including standing when urinating and frequent hand washing around toileting. The patient was able to draw pictures of her nightmares involving the bugs and to label them. She reported that she worried about her mother because people at the shelter had accused her mother of using drugs, which was untrue. She also described conflict between her

mother and an uncle, which was reflected in confrontations during which the uncle cursed her mother. The patient's father had irregular contact with her and often disappointed her. The history further supported a diagnosis of ADHD, with significant psychosocial adversity; and a diagnosis of phobic hallucinations with anxiety was made. The mother was reassured her daughter was not crazy, and outpatient follow-up was arranged.

In evaluating children and adolescents in the emergency service, clinicians should remember that a mistaken diagnostic label of psychosis based on hallucinations alone will follow the young patient in his or her medical record and will influence future evaluations and clinical decision-making. Given the developmental issues and limitations of the emergency evaluation, diagnosis and treatment should be periodically reassessed.

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CME Disclosure

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