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"Fifteen minute consultation on children *"hearing voices"* - when to worry and when to refer"

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ABSTRACT

Auditory hallucinations are uncommon paediatric presentations, but they can be alarming and lead to emergency consultations. This review outlines the phenomenology of auditory hallucinations, their assessment and clinical significance. Auditory hallucinations are seen in the course of acute medical disorders, often together with decreased levels of consciousness, as in febrile illness and in toxic, neurologically compromised states; they can also be a feature of episodic neurological conditions such as migraine and temporal lobe epilepsy. Auditory hallucinations are key symptoms in psychiatric disorders such as schizophrenic and other psychotic states, but they can also present with depressive and anxiety disorders, and in the context of virtually every psychiatric disorder of childhood. In fact hallucinations - usually simple and transient - are common in the general child populations. Auditory hallucinations become clinically significant when they occur as part of a medical disorder or in the context of acute psychotic states and schizophrenia, when they are frequent, complex, distressing and cause impairment. The treatment of clinically relevant hallucinations is that of the primary medical or psychiatric disorder. Occasionally they require treatment in their own right with psychological treatments, and only when these have been tried and fail a careful trial of anti-psychotic medication may be appropriate.

INTRODUCTION

“Hearing voices” is not a common presenting complaint at the paediatric clinic. Nevertheless this can be an alarming symptom and lead to emergency consultations¹. What does hearing voices mean, why can this be “*worrying*” for clinicians, and what should they do?

“Hearing voices” refers to auditory hallucinations, the experience of complex auditory perceptions in the absence of the expected external sensory stimuli. Hearing external sensory signals requires an intact neuro-otological system: auditory hallucinations imply an overdrive of this system caused by

either functional and/or organic anomalies in underlying neurological structures. Hallucinations tend to occur alongside situations with decreased or changing levels of consciousness as for example sleep, drug induced or other confusional states.

Acute auditory hallucinations can be alarming as they suggest the possibility of an acute neurological disorder or of mental illness with deficits in reality testing and therefore suggestive of mental disintegration, of “losing control of own’s mind”.

Clinicians need to ascertain the nature of the hallucinations, their clinical significance and medical and psychiatric associations.

CLARIFYING THE NATURE OF HALLUCINATIONS

Hallucinations should be distinguished from common benign perceptual experiences². This includes illusions, when actual external sensory inputs such as noises or voices are distorted or misinterpreted, or eidetic imagery whereby unusually vivid subjective visual images of an object continue to be “seen” when this is no longer objectively present. Hallucinations differ from children’s imaginary companions because they are not under the child’s control. Hallucinations that occur whilst going into and out of sleep, the so-called hypnagogic and hypnapompic hallucinations, are regarded as a normal aspect of the sleep process.

Auditory hallucinations can be simple and benign, for example hearing one’s name being called or footsteps, or they can be complex and more likely to be psychiatrically relevant, as when hearing voices talking amongst themselves. These voices might discuss the subject or give instructions or orders.

ASSESSING THE PRESENCE OF HALLUCINATIONS IN CHILDREN

The experience of auditory hallucinations is highly personal, and clinicians rely on individuals’ accounts to establish their nature and judge their significance. This requires establishing: 1) their

sensory nature: they are not thoughts but true perceptions akin to hearing the interviewer's voice; 2) the lack of the child's control over them: they are not brought on voluntarily; 3) there is not an obvious external auditory stimulus; 4) their complexity, noting whether they are noises or voices; and if the latter, do they simply consist of a name being called, or are they voices talking and/or addressing the child?; 5) details of the voices including gender, accent, personified or not, familiar or not; and 6) context with regards to onset, and do they occur in clear consciousness or are they linked to drug taking or febrile illness?. Trying to establish whether children acknowledge the experience as being "real" or not may be confusing as hallucinations can be experienced as very real to them.

Overall, the more complex and detailed the experience, the more confident can the clinician be that it constitutes an auditory hallucination as opposed to an illusion or distortion, and that it is likely to have clinical psychiatric significance.

In young children clarification of the nature of the hallucinations is not always straightforward. Because of developmental immaturity, before seven years of age it is especially difficult to differentiate hallucinations from dreams^{3,2} and reliance needs to be put on observable behaviour and accounts by parents or others close to the child, or for example seeing the child talk or respond to invisible people or objects. Parental information is also important as corroborative evidence in uncommunicative older children and young people, in those with developmental delays or who have difficulties communicating internal mental events.

WHEN ARE AUDITORY HALLUCINATIONS CLINICALLY RELEVANT? (Table 1)

TABLE 1 HERE

Because auditory hallucinations are a key feature in the majority of children with functional psychotic states such as schizophrenia, it is sometimes assumed that in the absence of an explanatory medical or neurological disorder they are always a sign of mental illness. However there

is ample evidence that hallucinations - especially when simple and occasional - are common in children in general population samples and reported by just short of one in ten children and young people^{4,5}. In these samples hallucinations are only exceptionally a sign of schizophrenia, and more often than not they are transient and benign. Hallucinations may be expected to become clinically significant when they occur as part of a medical or psychiatric disorder - especially in the context of acute psychotic states and schizophrenia - and when they are frequent, complex, distressing and causing impairment.

MEDICAL CAUSES/ASSOCIATIONS OF AUDITORY HALLUCINATIONS (Table 2)

TABLE 2 HERE

Acute medical causes: Acute onset hallucinations caused by a medical disorder tend to be seen in febrile, drug and other toxic states, and acute neurological states such as encephalitis, alongside decreases in levels of consciousness; in severe cases this will amount to mental confusion and delirium, characterised by fluctuating disorientation in time and space, disturbed attention, concentration and memory, psychomotor agitation and restlessness, and a disturbed sleep cycle⁶. Simple auditory hallucinations such as hearing noises can be a presenting symptom in some brain tumours². However medical “organic” hallucinations tend to present more prominently in modalities other than auditory, such as visual, skin or olfactory.

Successful treatment of the underlying medical disorder and management of associated confusion states when present should help resolve the hallucinations. Nevertheless, sometimes they persist after the medical problem has ceased and this calls for referral to psychiatric specialists for assessment and treatment.

Episodic medical causes: Episodic perceptual distortions and hallucinations are described in children with temporal lobe epilepsy, and as with acute medical disorders, these are more likely to be visual than auditory. A variety of auditory and visual distortions and hallucinations has been described in

children with migraine, and are sometimes referred to as The Alice in Wonderland syndrome⁷.

Hallucinations are also a feature of sleep disorders such as narcolepsy. Treatment of the underlying disorder should reduce the visual and auditory hallucinations, but again when they persist, they will require referral to a child psychiatrist.

HALLUCINATIONS AND PSYCHIATRIC DISORDERS IN CHILDREN

Auditory hallucinations can present in a number of psychiatric disorders of children and adolescents, and are often experienced along with hallucinations in other – commonly visual - sensory modalities.

TABLE 3 HERE

Psychotic states (Table 3): The presence of medically unexplained, distressing, recurring and prominent auditory hallucinations calls for psychiatric referral and assessment, as they may be an expression of a schizophrenic, schizoaffective or unspecific psychotic disorder^{8,9}. They can also be a feature of schizotypal personality disorders and of prodromal or “at risk” mental states for schizophrenia and psychoses. In schizophrenic psychoses, auditory hallucinations are often accompanied by visual hallucinations, and there are in addition delusional beliefs, often paranoid or persecutory, when children may complain that they are being poisoned or followed or that they are the subject of some conspiracy, or with ideas of reference, false identity, guilt or hypochondriacal concerns. Other psychotic symptoms include: 1) abnormalities in language production such as incoherence, mutism or laconism, and repetitive speech; 2) inappropriate and incongruous affective states, sometimes expressed as inappropriate giggling, 3) changes in levels of activity, not uncommonly hypo-activity, 4) bizarre behaviour and 5) social withdrawal.

Occasionally an acute functional psychosis turns out to be the harbinger of an encephalitic process¹⁰. This possibility calls for vigilance from the managing psychiatrist, who will request dual paediatric/neurological and psychiatric reviews in the presence of emerging medical signs or indicators.

In affective psychotic states such as manic/bipolar disorder and psychotic depressive disorders, auditory hallucinations will often be “mood congruent”, for example voices telling young people with depression that they are no good and worthless and/or instigating suicide, accompanied by delusions or breaks with reality involving intense feelings of worthlessness, failure, or of having committed sins or major reprehensible misdeeds.

Other psychiatric disorders: Hallucinations are seen in the course of substance abuse disorders, but even though not hallmark features, they can present alongside virtually any psychiatric disorder of childhood. They are seen in association with depressive symptoms and anxiety disorders ^{11,1}. In post-traumatic stress disorders repetitive intrusive intense visual images of the traumatic event are sometimes reported. They can be manifest in attention deficit, conduct and oppositional disorders, when voices might tell the child to do “bad things”. Hallucinations in the course of these disorders may be chance findings on assessment, of little concern to the child, to the extent that parents may not even be aware of their presence, and not require special treatment. However occasionally they become prominent and distressing and need psychiatric attention in their own right.

Hallucinations in clinical samples of children with emotional and conduct disorders appear to have limited predictive value for future psychotic states^{12,1}. Nevertheless, even after they cease to be a source of concern they may persist in a number of children. The persistent tendency to hallucinate in some children may be linked to neuro-psychological deficits and a proneness to mental dissociation, involving a sense of detachment from immediate surroundings or reality under stress¹².

Other associations: General population studies have identified associations of childhood hallucinations and/or of other psychotic symptoms such as delusions with environmental stresses including bullying and with suicidal thoughts and behaviour; they have also documented an increased risk for the development of schizophrenia and of other psychotic states in adulthood, albeit their predictive value is too small to have preventative implications ^{13,5}. It is not clear to what extent these associations are mediated by other clinical features, for example pre-existing social

anomalies in bullying, the severity of any associated depressive symptoms or disorder for suicidal behaviour, or emerging schizotypal personality disorders in relation to adult psychotic states. These studies however serve as a reminder that in clinical child psychiatric samples, prominent hallucinations may be a marker of psychiatric disorder severity and psychological vulnerability, and of the need for psychiatric assessment and treatment.

MANAGEMENT

Auditory hallucinations when part of a psychiatric disorder - be it a full psychotic state, a depressive, anxiety, post traumatic stress or other - may be expected to improve and resolve alongside the treated psychiatric disorder. Occasionally however they will persist and require psychiatric treatment in their own right with psychological treatments which may include CBT^{14,1,15}. When these fail, carefully monitored use of antipsychotic medication can be helpful¹⁴.

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TABLES

Table 1: Clinical significance of auditory hallucinations

Complex, such as when voices talk among themselves or to the child

Frequent, distressing and impairing

An expression of a medical disorder

A symptom of a psychotic disorder, including schizophrenic spectrum, bipolar or severe depressive disorders

When distressing and/or part of another child psychiatric disorder

Table 2: Some medical causes of childhood auditory hallucinations

Acute: often in the context of with decreased consciousness levels

- Febrile illness
- Drug induced and toxic states
- Encephalitis and other brain disorders such as tumours

Episodic

- Temporal lobe epilepsy
- Migraine
- Sleep disorders

Table 3: Characteristics of psychotic states of children and young people

Clear consciousness: the child is aware of his/her surroundings, adequately oriented in time and space

Delusional beliefs and hallucinations

Abnormalities in language production including incoherence, mutism or exceedingly laconic/sparse speech, repetitive speech

Inappropriate or incongruous affect, such as laughing over serious matters, excessive giggling

Changes in levels of activity – commonly hypo-activity

Bizarre behaviour

Social withdrawal

TEST YOUR KNOWLEDGE

WHAT IS THE MOST LIKELY DIAGNOSIS?

- Hypnagogic hallucinations in a well-adjusted 12 year old boy (1)
- Illness related delirium state (2)
- Acute psychotic state, possibly schizophrenic (3)
- Anxiety disorder with dissociation (4)
- Depressive disorder (5)
- Nightmares
- Post traumatic stress disorder
- Bipolar disorder
- Temporal lobe epilepsy
- Adolescent turmoil

1. Hypnagogic hallucinations in a well-adjusted 12 year old boy

Over the course of a consultation about her 12 year-old son' mild asthma, his mother mentions that he has complained lately of hearing people mumbling when he is going off to sleep at night. This has happened on a few occasions and she wonders whether it may be a sign of illness. Apart from his well controlled asthma, he is a well adjusted boy, doing well at home and in school, emotionally, behavioural and educationally.

Answer: the hallucinations occur exclusively when he is about to get into sleep; this is characteristic of hypnagogic hallucinations, which are not indicative of a medical or psychiatric disorder.

Nightmares by way of contrast occur during sleep, they are unpleasant vivid dreams that cause a strong emotional response, and sufferers tend to wake up in a state of anxiety.

2. Acute illness related delirium

Peter, a 9 year old boy, has had a recent admission to Paediatric Intensive Care with meningococcal disease and sepsis. He responded to treatment, his medication which included sedatives was reduced, and he was becoming ready for transfer to the acute ward. At that point his behaviour changed, he became restless and agitated, disorientated in time and space, he said he was seeing and hearing strange men around his bed which his parents could not see, and that these men were telling him to get out of bed and go home. His stage of agitation, disorientation and hallucinations lasted for 2 days, after which his mental state returned to normal and the hallucinations ceased.

Answer: The closeness in time between this boy's illness and withdrawal of sedatives and the onset of hallucinations suggest a link. The associated disorientation and agitation indicate that this is an illness related confusional state. In post traumatic stress disorder symptoms develop in the month following a traumatic event such as critical illness and PICU admission, but there is not disorientation and severe agitation, and the main features are a combination of re-living the traumatic event in the form of flashbacks, nightmares or repetitive and distressing images or sensations, avoiding certain people or places that remind of the trauma; being very anxious and finding it difficult to relax, constantly being aware of threats and easily startled.

3. Acute psychotic state, possibly schizophrenic

Joanna is brought to Accident and Emergency by her teacher, who has observed her behaviour has changed over the past month or two. Previously she was a slightly withdrawn girl who tended to keep herself to herself, but she joined in all class activities, was liked by other pupils and her school performance was average to above average. Recently she had seemed increasingly distracted and withdrawn, quite uncommunicative, her speech difficult to follow and she appeared to be talking to

unseen people. She had taken to leaving lessons half way through and wander aimlessly in corridors. When reprimanded she would giggle inappropriately and say strangers were talking to her; she also believed there was some sort of conspiracy to harm her. Her parents were becoming very concerned about the changes in her behaviour. Physically she was well and there were no indications of substance abuse, febrile or neurological illness.

Answer: Joanna displays a marked change in behaviour: the combined presence of increasing withdrawal and bizarre behaviour, hallucinations and delusional beliefs, abnormal language and incongruous mood in the absence of a medical disorder or substance abuse is strongly suggestive of this being the early stage of a schizophrenic disorder. It is not a bipolar disorder because in manic psychoses there is euphoria and irritability, over-active behaviour, rapid thoughts and speech; hallucinations and delusions tend to be “grandiose” in content such as the person having special status or powers.

4. Hallucinations: Anxiety disorder with dissociation

A 12 year old boy was brought to CAMHS by his parents with a history of hearing a voice from within which was like his thoughts being spoken, but nevertheless as clear as the interviewer’s voice; he was hearing the voice night and day, often talking about others. Sometimes he heard voices telling him to do something wrong. The voices had been present for the past 6 months and when he heard them he seemed very frightened and would get into a panic attack for about 15 minutes. The problem had started after his best friend died having been run over by a car, and sometimes he thought the voice was that of his dead friend talking to him. He had become generally very anxious, worrying about everything and everybody, difficult for his parents to calm and soothe, his school attendance increasingly precarious. He displayed unusual episodes when he looked somewhat perplexed with the unpleasant feeling of being half asleep and half awake, of objects changing shape or colour. There was no history or indications of migraine or epilepsy nor of delusions, grandiose

ideas, bizarre or withdrawn behaviour, a change in language production or incongruous emotional expression.

Answer: In this case the hallucinations occur in the context of a severe anxiety disorder, precipitated by bereavement and accompanied by visual distortions and dissociative-like experiences suggestive of depersonalization. There are no indications of psychoses over and above the presence of hallucinations. There is no history or indications of migraine or epilepsy, but the presence of the dissociative episodes make it wise to investigate further the possibility of temporal lobe epilepsy

5. Adolescent Depression

Claire is a physically healthy 15 year old who over the past few months has lost interest in things and is looking and feeling sad and unhappy most of the time. This started after she had a row with her parents over friends, she had less good than expected marks in school and she fell out with a friend at school. She gradually became less interested in going out and meeting friends, withdrew to her room and found it hard to go to school. Her concentration deteriorated and she became unable to do school work. On examination she admitted to feeling very sad and worthless, guilty for failing in school, unable to see a future for herself, tired and with general loss of energy and interest. She was also sleeping badly and was over-eating. She had started to hear a woman's voice talking to her at night and during the day, telling her that she was no good and that she should do herself in. Claire had been thinking about suicide and started planning an overdose to end it all. There is a strong family history of depression.

Answer: The hallucinations in this case are a feature of a severe depressive disorder, they add to its severity and to the suicidal risk. This is much more than adolescent turmoil, where there is mood lability and concerns about self-esteem and worth, but these changes are usually mild and short

lived and do not lead to the profound unhappiness, persistent lack of interest and pleasure, low self worth and active consideration of suicide seen in adolescent depression.