

Hallucinations and Mental Health in Children

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Received - 11 October 2016; accepted - 3 November 2016

ABSTRACT

Hallucinations refer to the experience of sensory perceptions in the absence of real external stimulation of the relevant sensory organ. In children they can present during states of reduced awareness and be sleep related or linked to abnormal neurological toxic states. Hallucinations – mainly auditory or visual in modality - are a key feature of psychotic states, but they can also present in the context of virtually any other child psychiatric disorder, and hallucinations – probably largely simple in nature - are also commonly reported by children and young people in general population samples. This review outlines hallucinatory presentations in delirium and in psychotic and non-psychotic child psychiatric disorders; it addresses their predictive value for later psychopathology, and the assessment and management of hallucinations in children.

Key words: Hallucinations, children and adolescents, delirium, psychotic states, assessment, management.

The mind is like a richly woven tapestry in which the colours are distilled from the experiences of the senses, and the design drawn from the convolutions of the intellect - Carson McCullers. http://www.brainyquote.com/quotes/keywords/senses_2.html

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HALLUCINATIONS IN CHILDREN

Our senses – smell, hearing and seeing, touching, tasting - are a front door to the world that surrounds us. Sensations are processed into perceptions or inner representations by cognitive processes in the brain, involving the combination of sensory inputs with prior knowledge (Jardri et al, 2014). Human perception can be distorted in different ways depending on the presence or absence of external stimuli, intactness of the underlying sensory and neurological pathways, and level of consciousness (Casey, 2007).

Sensory distortions in the presence of real external stimuli may include hypoesthesia or hyperesthesia (reduced or amplified intensity of perceptions), metamorphopsia (variations in size or shape), derealisation (the external environment seems unreal) and illusions (misinterpretations of true sensations). These distortions may or may not be an expression of abnormal sensory, neurological or psychiatric states.

Hallucinations are the experience of *sensory perceptions in the absence of real external stimulation* of the relevant sensory organ; they occur in the wake state and with a sufficient sense of reality to resemble a veridical perception over which the subject does not feel direct and voluntary control. They can be differentiated from eidetic images, the experience of vivid visual perceptions which resemble those previously seen in the external environment or imagined and where the image is not subject to voluntary control or recall (Casey, 2007).

Hallucinations in children can present during states of reduced consciousness or awareness such as whilst falling asleep or waking up, in abnormal neurological states including delirium and in alcohol or drug intoxication or withdrawal. In psychiatric disorders, the most commonly reported hallucinations are in the auditory and visual sensory modalities, “hearing and seeing things that are not there”. As in adults, they are a key feature of psychotic states, namely schizophrenia spectrum and mood disorders. Nonetheless they can also present alongside other child and adolescent psychiatric disorders such as anxiety and conduct disorders, as a response to stress and to substance abuse, in medical conditions such as certain forms of epilepsy or in the context of high fever. Moreover hallucinations are also reported by mentally and physically healthy children and young people

What are they not in children?

Many children have so called imaginary companions. Imagination refers to the act of power of forming a mental image of something not present to the senses and it forms the basis of fantasy. Whilst fantasy activities are common in children, even young pre-school children are able to differentiate these as fantasy and acknowledge them as “pretend” and as different from perceptions. Unlike hallucinations imaginary companions usually lack the characteristics of sensory experiences and are within the individual’s control.

WHEN ARE THEY MEDICALLY AND PSYCHIATRICALY RELEVANT?

In the common imagination, hallucinations tend to be linked to severe mental illness such as schizophrenia and to the notion of losing control of one's mind. If prominent they can be highly alarming to children and parents and prompt paediatric emergency assessments (Edelsohn, 2006).

Nevertheless hallucinatory phenomena are common in the general child population. In response to questions such as "Have you ever heard voices or sounds that no one else can hear?" or "Have you ever heard voices when you were alone?" about 10% of children or young people will acquiesce. Many of these experiences will be simple, such as noises or single words, transitory, substantially less elaborated and distressing than those observed in clinical samples of children with medical or psychiatric disorders. They may be linked to exhaustion, insufficient sleep or sensory stimulation, to fever or medication taking. Some positive answers to survey questions may in fact be an artefact of immature cognitive development in young children, making it difficult for them to fully comprehend what they are being asked or to differentiate hallucinations from dreams and illusions. Only exceptionally will the perceptual changes be a symptom of childhood schizophrenia.

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 - when they are frequent, complex (containing a narrative, multiple voices, multi-sensory), when they are distressing and cause impairment.

HALLUCINATIONS, NEUROLOGICAL DISORDERS AND TOXIC STATES

Acute hallucinations are seen in febrile, drug and other toxic states, in neurological disorders such as brain tumours and in acute neurological states such as encephalitis, often within a clinical picture of mental confusion and delirium.

In addition to the presence of hallucinations, delirium is characterised by fluctuating disorientation in time and space, disturbed attention, concentration and memory, psychomotor agitation and restlessness, and a disturbed sleep cycle. Children, especially younger preschool children, may be more vulnerable than adults to experiencing delirium with hallucinations and delusions (Hatherill and Flisher, 2010), and they may also be more prone to other sensory distortions. In a sample of children and adolescents with meningococcal disease, "out-of-body" type experiences were mainly reported by preschool children, possibly reflecting cognitive or brain immaturity through failure by the brain to integrate complex somatosensory and vestibular information (Shears et al, 2005).

In some paediatric intensive care units (PICU) delirium has been estimated to occur in 15% of admissions (Traube et al, 2016). Common causes or precipitants are conditions

of brain toxicity, infectious diseases with high fever or septic illness, neurological disorders or drug induced following anaesthesia or benzodiazepine withdrawal (Turkel and Tavare, 2003; Schieveld et al, 2007). Anticholinergic agents have regularly been reported as causing delirium in this age group and delirium has also been described in adolescents who ingest anticholinergic plants for their hallucinogenic properties. Factors proposed to increase the risk for delirium in children and adolescents include social isolation, sensory extremes, visual or hearing deficits, immobility as well as environmental novelty or stress (Hatherill and Flisher, 2010).

Successful management of the underlying medical disorder, of the delirium or confusional state may be expected to resolve these hallucinations.

Episodic perceptual distortions and hallucinations are described in children with temporal lobe epilepsy, and in migraine where the "Alice in Wonderland syndrome" refers to a variety of hallucinations and illusions of size, time, colour body shape and movement (Smith et al, 2015). Sleep related hallucinations are usually without clinical significance, but in specific cases they may be part of a childhood sleep disorder such as narcolepsy.

Successful treatment of the underlying disorder should reduce the medically linked visual and auditory hallucinations, but when they persist, they may require referral to a child and adolescent psychiatrist.

HALLUCINATIONS AND CHILDHOOD PSYCHIATRIC DISORDERS

Hallucinations can be a symptom of a number of child psychiatric disorders. Whilst they are a key feature and present in most children with psychotic states such as schizophrenia, they are rare in non-psychotic paediatric disorders. Nevertheless because schizophrenia is very rare in children, overall clinically they are more likely to present in non-psychotic than in psychotic states. The associated psychopathology may be conceptualized as firstly, psychotic disorders including schizophrenia spectrum (schizophrenia, schizoaffective, acute and transient psychotic disorders; related states such as schizotypal personality disorder, and prodromal or "at risk" mental states for psychoses), and mood disorders (bipolar disorder and major depression with psychotic symptoms).

Secondly, disorders where hallucinations are not common nor characteristic, but are an associated symptom, for example anxiety and conduct disorders. Differential diagnosis may be required from other psychopathological features which can resemble hallucinations, for example intrusive obsessions in obsessive-compulsive and intrusive images or thoughts in post-traumatic stress disorders (Dominguez and Garralda, 2016).

Psychotic states

Auditory hallucinations have been found to be the most common psychotic symptom in children and young people with psychotic states (schizophrenia, manic-depressive, schizoaffective or unspecified diagnoses) (Garralda 1984a, 1985). Children with these disorders report hearing voices which often address them and tell them to carry out actions, not uncommonly wrong doings. Some contain suicidal instigations, and occasionally there is a direct relationship with other suicidal symptoms. The tone may be unpleasant or pleasant, and voices tend to variously attributed to unspecified or familiar people such as school contacts or parents; more rarely they may be thought to be God's. Some children interpret the voices as their own thoughts being spoken aloud or other people speaking their thoughts. Visual hallucinations are less common, and may involve unidentified people or family members, animals or objects; it is rare for children to report more bizarre contents such as seeing the devil.

In schizophrenic spectrum psychoses, hallucinations are usually accompanied by delusional beliefs, often paranoid or persecutory: children may complain that they are being poisoned or followed or that they are the subject of some conspiracy, or express ideas of reference, false identity, guilt or hypochondriacal concerns. Other psychotic symptoms include: abnormalities in language production such as incoherence, mutism or laconism or repetitive speech; inappropriate and incongruous affective states, sometimes with inappropriate giggling, changes in levels of activity, not uncommonly hypo-activity, bizarre behaviour and social withdrawal.

In affective psychotic states such as manic or bipolar disorder and in psychotic depression, auditory hallucinations are often "mood congruent", for example voices telling young people that they are no good, 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.

Occasionally an acute functional psychosis turns out to be the harbinger of an encephalitic process, requiring appropriate assessment and management.

Non-psychotic states

Hallucinations can present alongside virtually any non-psychotic psychiatric disorder of childhood. Sometimes they are chance findings on psychiatric assessment, of little concern to the child, to the extent that parents may not even be aware of their presence. Occasionally however they become prominent and distressing and need psychiatric attention in their own right.

When they do, they can resemble those seen in psychotic states (Garralda 1984b). Auditory tend to predominate over visual phenomena. The length of time they are present at the time of psychiatric clinical presentation can vary considerably and range from days to years. Episodes tend to be brought on by stressful events, distress, naughtiness or temper. Most commonly children report that voices

address them, asking them to do something wrong and unpleasant, sometimes with threatening comments. Many are observed to become anxious and frightened in response to hallucinations, and some fight them, refusing to obey orders. There is a trend for the voices to be located predominantly in the child's internal space before the age of 13 years and in the external space after that age. Visual hallucinations include seeing frightening objects such as skeletons or ghosts, but some children also talk about seeing recently deceased people.

Hallucinations in children with non-psychotic clinical psychiatric disorders would appear to be more common in older than in younger children, and to be linked to neuro-developmental vulnerabilities such as reduced intellectual level, problems in reading ability, and discrepancies in verbal performance IQ values. They have also been found to be associated with stress and trauma and illness precipitant stressors, with mood changes and dissociative symptoms - such as derealisation. Long-term follow-up in adulthood of clinical samples of children presenting with hallucinations and otherwise non-psychotic psychiatric disorders (Garralda, 1984c) has not identified an increased risk for psychotic states, when compared with children with similar and comparably severe psychiatric disorders, but those with hallucinations appear to have a tendency to continue to experience complex hallucinations and dissociative phenomena such as depersonalization and derealisation, déjà vu and short dissociative episodes involving a sense of detachment from immediate surroundings or reality.

ASSOCIATIONS AND PREDICTIVE VALUE OF HALLUCINATIONS IN NON-CLINICAL COMMUNITY SAMPLES

The great majority of children with hallucinatory experiences do not have psychotic states nor do they ever make the transition to a psychotic disorder. In general population samples most recede over time, and in clinical samples their course may be expected to be that of the underlying or co-existing psychiatric disorders (Dominguez and Garralda, 2016).

General population studies have linked childhood hallucinations to environmental stresses such as bullying and to suicidal thoughts and behaviour. It is however not clear to what extent these associations are mediated by concurrent psychopathology, such as pre-existing social anomalies and emerging schizotypal disorders that would contribute to both bullying and hallucinations, or by severity of depressive disorder contributing to both hallucinations and suicidal behaviour.

Earlier longitudinal studies showed an increased risk for adult schizophreniform diagnoses, present in a quarter of children self-reporting a combination of hallucinatory experiences and delusional thoughts at eleven years of age, but later meta-analytic studies have estimated that only a small percentage (7%) of children or adults reporting hallucinations develop psychotic disorders (Linscott and van Os, 2013) and the predictive value of childhood

hallucinations in general population samples maybe regarded as low and of limited use for psychosis prevention. Even when they are part of “at risk mental states” (ie the presence of either attenuated positive psychotic symptoms, or of full blown psychotic symptoms that are brief and self-limiting; or of a significant decrease in functioning in the context of a genetic risk for schizophrenia; or symptoms alongside distress, dysfunction and help seeking) the risk of conversion to psychosis has been estimated as 26% (16% to schizophrenia) (Fusar-Poli et al, 2013).

It seems plausible that the predictive value of childhood hallucinatory experiences for adult psychoses will be accounted for by complex hallucinations, in the context of a summation of psychotic indicators, such as delusional beliefs, negative and disorganized symptoms, neurocognitive and social impairment, behaviour and mood regulation anomalies, and exposure to sufficient environmental stressors (Dominguez et al, 2010).

ASSESSMENT

In children presenting with sensory distortions, the first task is to clarify whether they are fantasies, illusions or hallucinations and if the latter, whether they are linked to sleep or medical states or are drug induced. Next is the task of clarifying whether they are simple such as occasionally hearing one’s own name being called or fleetingly seeing shadows out of the corner of one’s eye, or complex, frequent and distressing to the child and therefore clinically significant. If the latter it is important to conduct a full mental state examination to complement a careful history of the symptom and its context, to ascertain whether they are part of a psychotic or of another psychiatric disorder. Their presence in non-psychotic states calls for exploration of vulnerabilities such as neuro-developmental anomalies, of possible traumatic stressors and dissociative symptoms, as well as of suicidality especially in the context of mood disorders.

Assessing the presence of hallucinations is not always straightforward, particularly in younger children who can have difficulty differentiating hallucinations from dreams, in those with intellectual disability or in mistrustful and uncommunicative young people. Detailed examination by clinicians such as child psychiatrists experienced in interviewing children and in managing psychotic and other psychiatric states is called for. In some cases the presence of hallucinations will need to be surmised from the child’s behaviour. Possible indicators include listening or gesturing into empty space, a tendency to lateral gazing with signs of hyper vigilance, abrupt interference with speech or self-talk, inappropriate laughing, or compliance with commanding messages.

MANAGEMENT

Although hallucinations may become a central clinical concern and require treatment in their own right, more

commonly they can take backstage in the management of the primary presenting medical or psychiatric difficulties.

Treatment of the associated psychiatric disorder may be expected to lead to alleviation of the hallucinatory phenomena. Across disorders therapeutic work aimed at stress and anxiety reduction and mood regulation and discontinuation of illicit drug use will usually improve hallucinatory-related distress.

Psychotic disorders

When hallucinations are part of a first psychotic episode, early identification and treatment are indicated. NICE guidelines (NICE, 2013) recommend urgent referral to a specialist mental health service, either to child and adolescent mental health services or to an early intervention in psychosis service. The currently recommended treatment includes the use of anti-psychotic medication in conjunction with psychological interventions. These will include psycho-education, reduction of stresses, family intervention and individual cognitive behavioural therapy, in addition to discontinuation of any illicit drug use. Antipsychotic medication is not recommended for psychotic symptoms which are not sufficient for a diagnosis of first episode psychosis or with the aim of decreasing the risk of psychosis (NICE 2013) but in young people with “at risk mental states” careful monitoring of the clinical state is called for.

Non-psychotic presentations

When hallucinations are part of anxiety, post-traumatic stress, disruptive or substance misuse disorders, treatment of these disorders is indicated.

Psychological Therapy for Hallucinations

As noted above, hallucinations themselves deserve particular attention and monitoring in clinical practice when complex (containing a narrative, multiple voices, multi-sensory), frequent, distressing and impairing, when they are directly linked to suicidality, when they persist even after the accompanying psychopathology has subsided, or when this psychopathology does not respond to treatment.

Since distress is one of the risk markers for hallucinations, stress management can be a major target of specific psychological therapies. In addition, therapeutic modalities for auditory hallucinations are being developed (Thomas et al, 2014). Edelson (2006) described CBT based brief intervention for hallucinations in children consisting of gaining an appreciation of the patient’s beliefs about the hallucinations, how they started, whether he or she can start or stop them, and help the patient identify alternative explanations for the hallucinations and introducing coping strategies.

Occasionally and in the face of persisting hallucinations which do not respond to appropriate interventions, the use of antipsychotic medication may be helpful (Vickers, 2002).

Psycho-education

Whatever the context of hallucinations as presenting symptoms, psycho-education to children and family about the symptoms is important. The alarm derived from the popular understanding of hallucinations as an expression of severe mental illness can sometimes be compounded by a family history of psychotic illness. It is therefore highly relevant for the clinician to share the differential diagnosis with the family, explain the potential ubiquitous presence of hallucinations across different child psychiatric diagnoses and their response to treatment, and - if they are not part of a psychotic illness - convey information about the limited predictive value for adult psychotic states. Destigmatization and normalization, in addition to attention to concurrent stressors and psychiatric disorders are thus key elements of therapeutic input.

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