



Understanding psychosis

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Abstract: Psychotic behavior is often unpredictable; thus, there can be an increased risk of violence toward others and oneself. This article details the etiology and diagnosis of psychosis and nursing interventions to provide appropriate care.

Keywords: acute psychotic behavior, mental health, psychosis, psychiatric nursing

Case study

TL was a 23-year-old male arrested for menacing in a suspected drug house. Police officers required the use of force to gain compliance with their directions. TL was alert and fully oriented to person, place, and time.

He was guarded and defensive, made poor eye contact, spoke loudly, and was verbose. His thoughts were non-realitybased, with themes of paranoia. He frequently tilted his head as if listening to someone else. Because of his presentation, security requested a review by the behavioral health team.

First, a physical examination was completed. He was afebrile with stable vital signs and blood glucose within normal range. He had a left orbital laceration with edema. A head X-ray, performed to rule out a traumatic brain injury resulting from the police force, was unremarkable. Due to his young age, other neurocognitive disorders were unlikely. Sexually transmitted infection and urine drug tests were negative. As there was no apparent secondary cause for TL's psychosis, he was referred to behavioral health.

TL was assessed by the behavioral health team and diagnosed with schizophrenia. He was started on olanzapine, an atypical antipsychotic, and stabilized. Released from custody 4 weeks later, he continued treatment in the community.

Introduction

Approximately 100,000 new cases of psychosis are reported each year in the US.¹ While prevalence estimates vary across studies, a metaanalysis indicates 0.8% of people will be diagnosed with psychosis at some point during their lifetime.² Additionally, patients with psychosis are frequently encountered in prisons and hospital EDs.^{3,4} Because psychotic behavior is often unpredictable, there is an increased risk of other-directed and self-directed violence.

De-escalation, rapid pharmacologic treatment, and physical interventions can temporarily mitigate psychosis-induced aggression or agitation; however, clinicians must understand the etiology of presenting psychosis to render effective treatment. Understanding the differential diagnosis process for psychosis helps healthcare professionals consider all possible etiologies for the presenting psychotic behavior before diagnosing and prepares nurses for appropriate patient care.

Psychosis

Psychosis is not a specific disease but a collection of symptoms that result from some other condition. The term describes a disconnect from reality where individuals may endorse false beliefs or interpret their surroundings differently than others due to altered informational processing.⁵

Key features of psychotic disorders are described as positive or negative symptoms. Positive symptoms reflect an excess or distortion of normal functioning. They can consist of altered sensory perception evidenced by hallucinations, disturbed thought processes evidenced by delusions,⁶ disorganized thoughts and speech,⁷ and inappropriate or bizarre behavior.⁸ Negative symptoms are characterized by restricted emotional expressions or an absence of appropriate behaviors resulting in social withdrawal.⁹ These include a blunted or flat affect, alogia (poverty of speech), avolition (lack of motivation to initiate activity), and anhedonia (inability to experience pleasure).¹⁰

Hallucinations are a perception of a sensory stimulus in the absence of a stimulus. Such perceptions can be visual, auditory, tactile, olfactory, or gustatory. Cues a patient may be hallucinating include intently listening or looking around as if following another conversation, talking to themself or mumbling, and inappropriate expressions of emotion such as laughter when receiving bad news.¹¹

Delusions, which are non-realitybased thoughts or fixed, false beliefs held with conviction, occur in different forms. The most common are persecutory delusions, typically accompanied by paranoia.¹² The patient may believe they are being spied on, harassed, or conspired against and exhibit extreme distrust of other people or organizations. Also common are delusions of reference13: a mistaken belief that ordinary events have hidden meanings or special significance to the patient, such as a TV newscast being specifically directed to them. Grandiose delusions are an inaccurate belief of possessing special powers, skills, intelligence, fame, or an exaggerated sense of self-importance that often results in dangerous or risky behaviors.14 Religious beliefs, while often inconsistent with science, are not considered delusional unless specific to only the patient and not otherwise accepted within a culture.¹⁵ For example, many Christians firmly

believe God speaks to them, which is considered acceptable. However, one who is convinced that they alone are chosen by God and given special powers to restore world peace is considered delusional. Preoccupation with religion is common and religious delusions often occur with themes of grandiosity.¹⁵

Erotomanic delusions are characterized by the false belief of being another person's love object, typically someone famous or of a higher social status, such as a celebrity.¹⁶ The patient may engage in unwarranted contact, harassment, or stalking behavior of that person.¹⁷ Somatic delusions involve a false belief about health or the body that cannot be altered by diagnostic testing or other evidence.

Nihilistic delusions are those in which the patient considers themselves nonexistent, typified by a belief of being dead, decomposing, disfigured, or missing appendages or organs. Bizarre delusions encompass inconceivable phenomena that may include an inability to control one's mind, such as a belief that aliens implanted a device in the head that steals thoughts (thought withdrawal), implants thoughts (thought insertion), transmits thoughts through the radio or TV (thought broadcasting), or imposes feelings (thought control). Mixed delusions are the presence of multiple types of delusions. If one specific type of delusion is predominant, other lesser types are considered accompanying delusions.

Disorganized thoughts are inferred from disorganized speech.¹⁸ Circumstantial thought is providing excessive and unnecessary information before answering a question, while tangential thought is wandering offtopic and never providing an answer. Loose associations involve jumping from one idea to another. Flight of ideas is characterized by verbose and pressured speech composed of unrelated thoughts. Abruptly stopping in the middle of a conversation is distinctive of thought blocking. Other types of disorganized speech include neologisms (creation of words that have no meaning other than to the patient), clang speech (rhyming repetition of words or phrases), loose associations (a derailment of thought where a patient's conversation does not follow a logical sequence), and perseveration (fixated repetition of words or phrases).

Differential diagnosis

While it is outside the scope of nursing practice to make a medical diagnosis, understanding the differential for psychosis can better prepare a nurse to provide patient care. It allows nurses to anticipate the future course of action and construct a plan of care.

The diagnostic differential for psychosis is substantial as it can result from numerous conditions.¹² Organic or secondary causes result from some other problems, whether medical conditions, substance use disorders (SUDs), drugs, toxins, or neurocognitive disorders. All must be ruled out before diagnosing a primary or psychiatric cause. Identifying any underlying causes helps to produce a quicker diagnosis, leading to more effective and efficient treatment of the patient (see *Flow chart*).

Secondary causes *Medical conditions, illness*

While numerous medical conditions and illnesses can cause acute psychosis, most can be classified as metabolic disorders, hepatic or renal disorders, oncologic disorders, or infectious diseases.

Metabolic disorders disrupt normal chemical reactions in the body by producing too much or too little of a substance necessary for health. The most common disorders result from endocrine dysfunction and dietary insufficiency. Hypoglycemia and keto-



acidosis share many similar signs and symptoms, including confusion, apathy, lethargy, and impaired judgment, which are also present in psychosis. Poor nutrition and severe dehydration, including diets high in refined carbohydrates¹⁹ or low in dairy or protein (vitamin B12 deficiency), have been linked to hallucinatory activity.²⁰ Any electrolyte imbalance can cause psychosis.²¹

Both decreased hepatic and renal function can produce visual hallucinations and cognitive impairment. Hepatic encephalopathy is induced by hyperammonemia secondary to severe liver disease.²² Likewise, uremia develops if the kidneys can no longer filter nitrogenous or other metabolic waste due to acute injury or chronic disease.²³

Cytokine-induced neuroinflammation arises from an immune response. Certain paraneoplastic disorders (those involving the central or peripheral nervous system) can result in encephalitis, which can affect consciousness, cognition, and perception.²⁴ Infections such as sepsis, meningitis, malaria, syphilis,²⁵ and those involving the urinary tract, especially in women over the age of 40 years,²⁶ can cause hallucinations and delusions. Pyrexia is also common with infection and occurs when the hypothalamus is prompted by cytokines to temporarily increase body temperature, leading to diminished consciousness, confusion, and hallucinations. Further, although the physiologic cause is not fully understood, severe sleep deprivation can induce hallucinations, delusions, disorganized thought, and slurred speech.²⁷

SUDs, drugs, and toxins

Substance-induced psychosis applies to both the intoxication and withdrawal phases of substance abuse while medication-induced psychosis refers to the use of prescribed or over-the-counter medications taken as directed.¹² Intoxication is marked by psychotic symptomology due to

24 | Nursing2023 | Volume 53, Number 10

the recent use of a substance; withdrawal is the presentation of psychotic symptoms due to a substance's abrupt reduction or discontinuation.¹²

Alcohol-related psychosis can occur during any stage of alcohol abuse. Acute alcohol intoxication is marked by the recent ingestion of alcohol accompanied by disorientation and impaired short-term memory.¹² Alcohol-related psychosis is characterized by disturbed auditory perception during or shortly after alcohol consumption.²⁸ Delirium tremens (DT) is a severe type of alcohol withdrawal marked by agitation, aggression, disorientation, and hallucinations.²⁹ DT can be fatal if left untreated.

Hallucinogen-related psychosis has been associated with the intoxication of commonly abused drugs, including tetrahydrocannabinol (THC) in cannabis, lysergic acid diethylamide (LSD), phencyclidine (PCP, "angel dust"), and psilocybin ("magic mushrooms"). These hallucinogenic drugs cause a neurochemical imbalance mediated by 5-HT2A (serotonin) agonism,³⁰ disturbing visual or auditory perception and causing delusional thought processes. While uncommon, disturbed sensory perception can persist from previous intoxications.31

Sedative, hypnotic, or anxiolyticrelated psychosis can develop from barbiturates, benzodiazepines, or other anxiolytic drugs. Intoxication is marked by disorientation, reduced consciousness, and impaired memory.³² Depending on the severity, visual, tactile, or auditory hallucinations can develop during acute withdrawal.³³ Withdrawal from severe barbiturate or benzodiazepine dependence can be fatal without medical supervision.³⁴

Stimulant-induced psychosis is precipitated by ingesting certain stimulant drugs, such as cocaine, amphetamine, methamphetamine,

3,4-methylenedioxy-methamphetamine (MDMA), or abusing prescription medications, such as Adderall and Ritalin. Stimulant drugs can cause an imbalance of dopamine and other monoamine neurotransmitters. This neurochemical imbalance is responsible for misinterpreting sensory information due to irregular salient processing (differentiation of an object's prominence in the environment)35 resulting in hallucinations, delusions, paranoia, and aggression.36 While symptoms of substance-induced psychosis quickly subside once the body clears the drug, anxiolytic psychosis can last several weeks.37

Corticosteroids are widely prescribed for their anti-inflammatory and immunosuppressant properties. An estimated 18% of patients treated with them develop corticosteroidinduced psychosis,³⁸ evidenced by hallucinations, delusions, impaired memory, and aggression. As the dosage increases, so too does the risk of psychosis.³⁹

Carbon monoxide poisoning is an example of toxic anoxia that leads to cerebral hypoxia. Hallucinations, disorganized thoughts, and short-term memory loss brought on by dopaminergic release⁴⁰ are neurologic signs of the brain's oxygen deprivation.

Organophosphate insecticides are the most toxic pesticides to vertebrates.⁴¹ Overexposure to pesticides is common in agricultural communities, and many types can produce changes in cognition and memory loss.⁴²

Neurocognitive disorders

Psychosis can occur with neurocognitive disorders. Age-associated cognitive decline or vascular dementia occurs due to impaired cerebral blood flow, often resulting in delusions, hallucinations, and memory loss.⁴³ Lewy body dementia and Parkinson disease both share the same pathologic brain changes evidenced by Lewy body inclusions (abnormal protein aggregates)⁴⁴ found in the substantia nigra. resulting in decreased dopamine production,45 frequently leading to hallucinations, disorganized thought, and reduced consciousness. Cytokine-induced neuroinflammation can also result from neurocognitive disorders such as Alzheimer disease, Huntington disease, multiple sclerosis, and traumatic brain injuries.46 Depending on the severity and parts of the brain affected, these disorders may be accompanied by hallucinations and delusions.47 Poststroke psychosis includes hallucinations or delusions⁴⁸ from a cerebral infarction predominately involving right-sided cortical areas.49

Deafferentation (freeing of motor nerve cells from sensory connections) induces structural changes in the brain.⁵⁰ Perceptual deficits (sensory loss) or extreme isolation can increase the risk of hallucinations. This same pathophysiology is responsible for phantom leg pain.⁵¹ Charles Bonnett Syndrome is a type of deafferentation in which visual hallucinations can occur in those experiencing partial or total vision loss. Auditory hallucinations can arise from the same mechanism as hearing loss.52 Visual and auditory hallucinations concerning social withdrawal, segregation, or loneliness may be related to sensory deafferentation.53,54

Psychosis vs delirium

"Psychosis" and "delirium" are often used interchangeably; however, the former is reserved for a disconnection from reality attributed to a primary (psychiatric) cause, and the latter is attributed to a secondary (organic) cause.⁶

An assessment may reveal more common features of delirium or primary psychosis. The presentation of delirium is marked by a diminished orientation and change in level of consciousness, sometimes accompanied by short-term memory loss, compared with that of primary psychosis, where orientation is unimpaired and recent memory unaffected. Disturbed sensory perception is common; visual or tactile hallucinations more frequently occur in delirium,⁵⁵ while auditory hallucinations are more prevalent in psychosis.¹² Some characteristics indicating psychosis is more likely to be secondary include older age, lack of psychiatric history, drug use, and signs or symptoms pathologically organic (see *Delirium or psychosis?*).

Primary (psychiatric) cause

Primary psychosis is pathologically psychiatric. Diagnosis is made by excluding all possible secondary causes. For example, although the exact causes are unknown, schizophrenia spectrum disorders result from a neurochemical imbalance. Researchers hypothesize that increases in dopamine in the nigrostriatal and mesolimbic pathways contribute to its positive symptoms,⁵⁶ and decreased levels in the mesocortical pathway elicit the negative symptoms.⁵⁷ Serotonin and glutamate are also suspected to play a role in dopaminergic imbalance as 5-HT1A and 5-HT2A are thought to regulate dopamine release,58 and NMDA to control the release of dopamine and regulate that of serotonin.59

Hallucinations, delusions, and disorganized thoughts are also prevalent in bipolar-related disorders.⁶⁰ These positive symptoms of psychosis can either be congruent (reflecting) or incongruent (in opposition) of mood. Likely, bipolar-related psychosis is also caused by the same neurochemical imbalances as schizophrenia spectrum disorders.⁶¹

Treatment

Treatment of psychosis is based on the underlying cause. Delirium secondary to medical conditions, drugs, or toxins often resolves once the underlying cause is addressed. Neurocognitive-related delirium caused by degenerative factors is often irreversible due to the progressive nature of the underlying conditions.

Pathologic psychosis often necessitates pharmacologic intervention with antipsychotic medications to correct dopamine imbalance by D1 or D1 and D2 antagonism. Many antipsychotics also act as 5-HT1A or 5-HT2A antagonists. When psychosis is stabilized to the point a patient can engage productively, Cognitive Behavioral Therapy for psychosis (CBTp) is an effective nonpharmacologic treatment.⁶²

Nursing interventions

Although most people with psychosis do not behave in a violent manner, a patient experiencing disturbed sensory perception may hear command voices instructing them to harm themself or others.⁶³ Likewise, those with disturbed thought processes may exhibit paranoia, distrust others, and believe others want to cause them harm. In either case, nurses should consider safety measures to protect staff, patients, and others.⁶⁴ One effective measure is maintaining

Delirium or psychosis?

Feature	Delirium	Primary Psychosis
Alertness	Impaired	Alert
Orientation	Confused	Unimpaired
Recent memory	Lost	Unaffected
Computational ability	Unable to calculate	Unaffected
Hallucinations	Visual, tactile ⁵³	Auditory ¹¹

26 | Nursing2023 | Volume 53, Number 10

a safe distance from the patient until an assessment is performed and the risk of violence is minimal.

A patient experiencing psychosis exhibits a reduced ability to effectively cope with triggers that provoke functional responses, and their ability to correctly interpret what they see or hear can be impaired. Decreasing environmental stimuli, such as TVs, radios, and activity in the patient's room, can reduce misperception and anxiety.¹¹

Nurses should be respectful of personal space. Explain any action before initiation as physical contact or sudden movement may be interpreted as aggression and should thus be avoided as much as possible.⁶⁴

Communication with someone experiencing active psychosis can be difficult. It can be encouraged, but nurses should not pry for information because doing so risks arousing suspicion in the patient. Nurses should speak clearly and use simple language delivered in a calm, nonthreatening tone. Topics should remain reality-based.⁶⁵

Arguing or trying to reason with a patient regarding what they are experiencing, or challenging false beliefs, promotes defensiveness, thus reinforcing non-reality-based thought.⁶⁴ It is beneficial to validate a patient's feelings related to their delusions. For example, a nurse could say, "I can see you are fearful because you believe others are trying to harm you." However, avoid making judgmental statements regarding the content of their perceptions.

Conclusion

Patients presenting with psychosis can be challenging. Understanding the etiology and differential process for diagnosing psychosis better prepares nurses to render appropriate care leading to faster and improved patient outcomes. Similarly, using proper nursing interventions increases the safety and quality of interactions.

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