

PSYCHOSIS

A Sx of mental illness characterized by the loss of contact with reality

Manifestations Hallucinations

Disorganized thoughts and speech

Emotions exhibited in an abnormal manner

Causes

Functional Schizophrenia

Manic phase of bipolar disorders

Psychotic depression

Organic Alzheimer's Disease

Other causes of dementia

Brain tumors

Drug Abuse Cocaine

Amphetamines

PCP ("angel dust")

STRUCTURAL ABNORMALITIES IN SZ

Decreased cortical thickness in the absence of **gliosis**

Reduction in the volume of the frontal lobe, medial temporal lobe, thalamus, and hippocampus ⇒ increased ventricular size

Decreased blood flow and glucose metabolism in the frontal lobe and left temporal lobe

Abnormal (*excessive*) **synaptic pruning** ⇒ decreased number of glutamatergic dendritic spines in PFC

Risk is increased if a specific variant in a gene related to synaptic pruning ⇒ **Complement Component 4 (C4)**

Gliosis: the proliferation of glial cells ⇒ occurs as a compensatory change in the degenerative diseases in the brain (typically later in life)

Synaptic Pruning: the process of synapse elimination that occurs between age 2 and onset of puberty

C4: plays a role in the immune system and also in brain development

Neurotransmitters

Multiple NT systems interact to cause the signs and sx of SZ

Functional abnormalities are related to alterations in: **Dopamine**

Glutamate

Serotonin

Positive Symptoms

Disorganized speech, thoughts, and beliefs

- May lose track of their ideas, meanings, and words (word salad)

- Thought processes are disconnected (loose associations)

- Ideas and images may become jumbled or linked together illogically

- Words and meanings that should be linked may become disconnected

Disorganized Movement and Behaviors

- May use exaggerated or repeated gestures

- May seem to be fidgeting, hyperactive, or preoccupied with meaningless physical movements

Cognitive Symptoms

Impaired Attention

- Trouble focusing or paying attention

Impaired Working Memory

- Ability to use information immediately after learning it

Poor Executive Function

- Ability to understand information and use it to make decisions

Patients often have difficulty learning from their experiences and can repeatedly make the same mistakes in situations requiring judgment

Poor insight into the severity of their disorder; tend to d/c therapy

SCHIZOPHRENIA (SZ)

Epidemiology

Onset Most common in young adults

Onset before adolescence or after 40 yr is *extremely rare*

Onset in males occurs earlier than females

Prevalence Equal (*male vs female*)

In general, better outcomes in females

SCHIZOPHRENIA (SZ) (cont)

Suicide	~ 15%
Etiology	Unknown Cause is multifactorial
Genetics	Significant genetic component with a complex, non-Mendelian inheritance Greatest risk factor → positive family hx Many genes involved → pt's inherit several risk genes → SNP's and CNVs
Environmental	Pt's more likely to experience: <ul style="list-style-type: none"> • premature birth • low birth weight • perinatal hypoxia Maternal viral infxn during pregnancy (<i>especially during the 2nd trimester</i>)
Early Neurodevelopmental Defect	Brain vulnerability by genetic predisposition Combined with environmental factors or stressors → Abnormal migration of neurons during CNS development → Results in Abnormal neuronal connectivity and abnormal brain circuits → Schizophrenia

SZ is more frequent in people born in cities and born between January and April (northern hemisphere)

SNPs: single nucleotide polymorphisms
CNVs: Specific copy number variations

Dopaminergic Pathways in the Brain

Nigrostriatal	Originates in the substantia nigra	Projects to the striatum
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Negative Symptoms

Alogia and Poverty of Speech

- May speak very little
- Speech may have little meaningful content
- May have long delays between words and sentences

Flattening or Blunting of Affect

- May have reduced emotional expression
- May not smile or frown in response to happy or sad events
- Voices may not change tone or pitch
- May not maintain eye contact or other kinds of emotional links with people

Anhedonia and Avolition

- May seem to lose interest in and energy for pleasurable activities and achievements
- Lack of desire, drive, or motivation to pursue meaningful goals

Catatonia and Posturing

- May freeze into unusual body positions
- May stop moving entirely
- Sometimes hold rigid poses for hours and will ignore external stimuli
- May show stereotyped repetitive movements

Lack of Motivation and Social Withdrawal

- Contribute to poor-self care skills
- Difficulties maintaining employment and living independently

