COGNITIVE AND MENTAL DISORDERS IN THE ELDERLY

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What is psychosis?

**Definition**
“Mental disorder characterized by gross impairment in reality testing, as evidenced by delusions, hallucinations, incoherent speech or disorganized and agitated behavior, without apparent awareness on the part of the patient on the incomprehensibility of his or her behavior”

**Clinical**
Presence of “hallucinations and / or delusions”

**Keypoints:**

1. primary or secondary
2. No reliable pathognomonic signs for distinction between primary and secondary
Primary psychotic disorders

**Schizophrenia and related disorders**
- Schizophrenia
- Schizoaffective disorder
- Schizophreniform disorder
- Delusional disorder
- Brief psychotic disorder

**Affective Psychoses**
- Bipolar disorder with psychotic features
- Unipolar depression with psychotic features
Secondary psychotic disorders

*Psychotic symptoms associated with dementia*
Alzheimers disease with psychoses
Vascular dementia with psychoses
Lewy Body Disease with psychoses
Other dementing disorders with psychoses

*Psychotic symptoms during delirium*

*Psychotic symptoms associated with medications and substance abuse*

*Psychotic symptoms due to medical and surgical disorders*
LIFETIME RISK

1 in 4 lifetime risk for experience of psychotic symptoms

(Khouzam & Emes, 2007)
Psychotic symptoms are not uncommon in the elderly population

Zayas & Grissberg, 1998
• community: 0.2% to 4.7%
• In nursing homes 10-63%

Östling & Skoog, 2002
• 3 year follow up study of psychotic symptoms in a population based-sample of very old people (85+) without dementia: 7.1-13.7%
• hallucinations and paranoid ideation associated with increased incidence of dementia and mortality within 3 years
# Frequency of psychotic symptoms in the elderly

<table>
<thead>
<tr>
<th>PSYCHOTIC SYMPTOM</th>
<th>FREQUENCY</th>
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<tbody>
<tr>
<td>Delusions</td>
<td>64%</td>
</tr>
<tr>
<td>Hallucinations</td>
<td>29%</td>
</tr>
<tr>
<td>Mixed delusions and hallucinations</td>
<td>7%</td>
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</table>
Risk factors for psychosis in old age

- Age-related deterioration of frontal and temporal cortices
- Neurochemical changes associated with aging
- Sensory deficits
- Social isolation
- Cognitive decline
- Medical comorbidities
- Polypharmacy
- Age related changes in pharmacokinetics and pharmacodynamics
- Comorbid psychiatric illnesses such as dementia and delirium

Targum & Steven, 2001
Etiology of psychosis in the elderly

<table>
<thead>
<tr>
<th>Cause</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dementia</td>
<td>40%</td>
</tr>
<tr>
<td>Major depression</td>
<td>33%</td>
</tr>
<tr>
<td>delirium</td>
<td>7%</td>
</tr>
<tr>
<td>Medical conditions</td>
<td>7%</td>
</tr>
<tr>
<td>mania</td>
<td>5%</td>
</tr>
<tr>
<td>Substance induced</td>
<td>4%</td>
</tr>
<tr>
<td>Delusional disorder</td>
<td>2%</td>
</tr>
<tr>
<td>Schizophrenia spectrum disorders</td>
<td>1%</td>
</tr>
</tbody>
</table>

Adapted from Miller et al. 2013

Manepalli et al, 2007
## Medical causes of psychosis

<table>
<thead>
<tr>
<th>Common medical causes</th>
<th>Vitamin B12 or folate deficiency, electrolyte abnormalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metabolic</td>
<td>Meningitis, encephalitis (e.g. herpes), syphilis, HIV</td>
</tr>
<tr>
<td>Infections</td>
<td>Parkinson’s disease, epilepsy, subdural hematoma, stroke, Huntington’s disease (rare), tumor (rare)</td>
</tr>
<tr>
<td>Neurological</td>
<td>Thyroid disease, adrenal disease, hyper or hypoglycemia</td>
</tr>
<tr>
<td>Endocrine</td>
<td></td>
</tr>
</tbody>
</table>

Adapted from Desai and Grossberg, 2003
Neurodegenerative disorders
Psychosis of Alzheimer’s disease

• Dementia has been reported most common diagnosis accounting for psychosis in the elderly (Holroyd, 2008)

• 30-50% of AD patients experience psychotic symptoms (Jeste & Finkel, 2000)

• Bassiony et al. (2000) in a community based study of AD: 30% showed evidence of psychotic symptoms and that delusions were more common than hallucinations

• Estimates for prevalence of delusions in dementia 9-63% and for hallucinations 4-41% (Ropacki, 2005)

• Most common hallucinations in AD visual and auditory (Tariot, 1995)

• Hypometabolism in prefrontal cortex correlates with delusions in AD (Sultzner et al. 2003)

• Evidence for association of psychotic symptoms with rapid decline in cognition in AD (Lewy et al. 1999)
Proposed criteria for Psychosis of AD by Jeste & Finkel

- Characteristic delusions or hallucinations
- Possible or probable AD
- Onset of psychotic signs and symptoms after onset of other dementia symptoms
- Present at least intermittently for at least 1 month
- Severe enough to disrupt patients functioning
- Not better accounted for by another psychotic disorder, a medical condition, effects of a drug
- Does not occur only during a delirium

Delusions in Alzheimer’s disease

Four common types of misidentifying delusions seen in AD:

• *The Capgras type*: replacement by impostors

• *The phantom boarder symptom*: having guests

• *The mirror sign*: misidentification of own mirror image

• *The TV sign*: misidentification of television images as real

(Karim & Burns, 2003)
Treatment of AD psychosis

Pharmacological:

• Antipsychotics have been the most widely used form of treatment for AD psychosis (Margallo-Lana et al. 2001)

• Efficacy of antipsychotics in controlling psychotic symptoms:
  - significant but modest effects (Schneider (1996)
  - atypical antipsychotics: significant improvements in several double blind placebo controlled trials (Street et al., 2000, 2001)

• Cholinesterase inhibitors:
  routinely used for cognitive deficits in AD and more recently possible usefulness in improving psychotic symptoms in AD has been demonstrated (Finkel, 2004)
NCD with Lewy Bodies

• Visual hallucinations most common symptom, in up to 80% of cases

• Fluctuating cognition, Parkinsonian motor symptoms, frequent falls, and sensitivity to neuroleptic medication (McKeith et al. 1996)

• Treatment is challenging!

• Extremely sensitive to antipsychotics: small doses can lead to extreme worsening of parkinsonian symptoms and about 50% of individuals experience life threatening adverse events (Mc Keith et al. 1992)

• Significant improvements in delusions and hallucinations with use of cholinesterase inhibitors (Fergusson & Howard, 2000)
• Psychotic symptoms most commonly extrinsic and only occasionally intrinsic (Wolters, 2001)

• Most Antiparkinsonian drugs can cause psychotic symptoms

• Between 20 and 60% of people with PD disease develop psychotic symptoms (Kuzuhara, 2001)

• Hallucinations are more frequent than delusions in extrinsic cases (Aarsland et al. 1999)

• Visual hallucinations more common than hallucinations in other sensory modalities (Hoeh et al. 2003)

• Risk for psychosis higher in later stages, concurrent dementia, or depressive illness (Aarsland et al. 1999)
Nonpharmacological interventions in NCD psychosis

• Reducing sensory deprivation

• Reducing inappropriate inner stimulation

• Measures for specific symptoms:
  - seeing impostors: establishing positive relationship with patient, introducing with every encounter
  - delusions of infidelity or abandonment: frequent family contact (videotapes, or phone calls), familiar items
  - stealing of belongings: duplicates

(McKitrick et al. 1992)
Affective disorders
Affective disorders

1. Psychotic depression occurs in 20% to 33% of geriatric patients (Holroyd&Laurie, 1999)

2. 5% in during manic phase

3. Greater incidence of psychosis compared to early onset depression (Sultzer et al. 2008)

4. Delusions frequently present (Kessing, 2006)

5. More brain stem and fronto-temporal atrophy, enlargement of ventricles (Martinez et al., 1996)
Delirium
Delirium

- 7-12% of diagnoses in psychotic geriatric patients (Holroyd & Laurie, 1999)

- Characterized by thought disturbance with themes that tend to form the current environment and situations, with poverty of thinking, irrationality, and with hallucinations (often visual) (Meagher et al. 2007)

- Hallucinations: 40% to 67%
  Visual >> auditory > other hallucinations

- Delusions: 25% to 50%
Substance-induced psychosis

1. Prevalence of substance use disorders in elderly persons:  
   2-3% in women and 10% in men

2. Psychotic symptoms may occur during alcohol, sedative,  
   or barbiturate withdrawal

3. Opiates may induce delirium, consequently psychoses

4. Prescribed medications (L-Dopa, anticholinergic, antirhythmic  
   agents, corticosteroids) are most common causes of psychosis
SCHIZOPHRENIA
A little bit of history…

Emil Kraeplin (1856-1926):
- Termed schizophrenia: *dementia praecox*
- Noticed that in some cases first onset in older age

Bleuler (1943)
- Late onset phenotype is distinct entity from early onset form
Characteristic symptoms
Two or more) of the following, each present for a significant portion of time during a 1-month period (or less if successfully treated)
1. Delusions
2. Hallucinations
3. Disorganized speech
4. Grossly disorganized or catatonic behavior
5. Negative symptoms

Social/occupational dysfunction
Duration: continuous signs of the disturbance persist for at least 6 months

Exclusion of schizoaffective and mood disorder
Exclusion of substance/general medical condition
Case example

A 71 year old widower presented himself to the doctor, saying that his neighbors had been planning to kill him for the last year. On further inquiry, he stated that he had seen them standing outside his house discussing ways of murdering him and was sure that one of them had decided to stab him when he returned home. He had tried phoning the police a number of times, but they did not believe him. He also claimed he was the last descendant of a royal family that had ruled the world, and his neighbors were jealous of him.

On mental state examination, he appeared disheveled and pale, as he had not eaten for days for fear of being poisoned. He muttered to himself while sitting alone in the waiting room and during the interview his speech was interrupted by pauses when he would stare in the air and mutter abuse. He was having persistent auditory hallucinations, which he described as the voices of his two neighbors constantly talking to each other about plans to kill him and ridiculing him.

He expressed delusions of reference, persecution, and grandiosity and had no insight into his problem. His past medical records were sparse. They showed that he had suffered from a “breakdown” at an early age and spent most part of his adult life in a long-stay mental hospital. For the last 18 years, he had not been known to mental health services and was living alone in supported housing.

During the exam, he became agitated, started shouting, and threatened to sue his doctor. After discussions, with psychiatric emergency services, he was admitted to the acute psychiatry ward for assessment. In the ward, he was prescribed 0.5mg of Risperidone, which he refused to take. He had to be given 1mg of Lorazepam intramuscularly twice a day for his agitation. His physical examination and lab investigations revealed that he had anemia due to a duodenal ulcer. He had painful callosities on both feet and never seen the podiatrist. On the fourth day of admission, his agitation began to settle and he started taking risperidone orally, which was increased to 1mg twice a day over three weeks. He was noted to be suspicious of the food and members of the staff and was often seen muttering to himself. After four weeks, his auditory hallucinations began to subside, he started looking after his hygiene to a reasonable degree but remained aloof ward activities. For 8 to 12 weeks he remained convinced about the plot to kill him and his royal lineage, but was less concerned about them. He also started eating regularly and agreed to accept help from caregivers at home to monitor his medication and meals of discharge. Weekly home visits by a community psychiatric nurse and regular follow-up appointments in the clinic were arranged on discharge.
Prevalence of Schizophrenia (early, late and very late onset combined)

- in the population aged 65 years and above is believed to be about 1% (Cohen et al. 2000)

- Out of these, nearly 25% have late- or very late onset illness, and the remaining 75% are people with early onset schizophrenia who have reached old age (Jeste & Twamley, 2003)
Clinical features

- **Bleuler and Bridge (1974, 1976)** described “burning out” of symptoms in old age.

- **Subsequent studies:**
  - positive symptoms less severe
  - negative symptoms and cognitive deficits more prominent (Davidson, 2000)

- Other authors questioned increase in negative symptoms
Cognitive deficits

• Association of Cognitive impairment with Schizophrenia is well documented (Goldberg, 1993)

• Most important predictor of function and outcome (Green, 1996)

• Cognitive deficits are often more marked in early stages of the illness, but a number of studies reported pattern of progression with advancing age (Eyler, 2000)

• Cognitive decline in number of domains (visuospatial ability, memory, language, executive functioning) (Rajji, 2008)
Factors influencing co-morbidity in old people with schizophrenia

- Comorbid medical conditions can adversely affect the clinical course of schizophrenia
- Comorbid conditions can adversely affect the treatment of schizophrenia
- Increased pain tolerance in schizophrenia can lead to underreporting of symptoms
- Cognitive deficits can diminish insight regarding physical problems
- Antipsychotic medication can reduce pain sensitivity
- Higher risk of noncompliance with treatment regimes for physical illness

Cohen, 2000
Prognosis

• **Kraeplin (1974):** Bleak outcome for schizophrenia has changed

• **Newer studies: Heterogenous outcome**
  Abrahamson et al. studied a population of elderly patients with schizophrenia and found improvement in 25% of the group and deterioration in 10%

• **The traditional view of males having a generally worse prognosis in schizophrenia has also changed (Mason, 1996; Harrison, 1996; Seeman, 1988)**
  up to 13 years after diagnosis women have a better picture advantage seems to be lost after 20 years
  Seeman suggested in 30 years outcome study: men are more severely ill in the first decade but then improve gradually, while women after initial mild illness, show increasing disability as age advances
Similarities and Differences between early and late onset schizophrenia

**Similarities**
- Genetic risk
- The presence and severity of positive symptoms
- Early psychosocial maladjustments
- Subtle brain abnormalities revealed by imaging

**Differences**
Late onset schizophrenia is characterized by:
- Fewer negative symptoms
- Better neuropsychological performance
- Better response to antipsychotics

Palmer et al. 2001
Compared with early or late onset schizophrenia, very late onset schizophrenia has some special features!

- Associated sensory impairment
- Social isolation
- A greater likelihood of visual hallucinations
- A lesser likelihood of formal thought disorder
- A lesser likelihood of affective blunting
- A lesser likelihood of a family history of schizophrenia
- A greater risk of developing tardive dyskinesia
- The significantly higher number of females affected than males

(Lisa et al. 2002; Tune & Salzman, 2003)
<table>
<thead>
<tr>
<th></th>
<th>EOS</th>
<th>LOS</th>
<th>VLOSLP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age at onset</strong></td>
<td>Before 40</td>
<td>Middle age (40-60)</td>
<td>65+</td>
</tr>
<tr>
<td><strong>Female preponderance</strong></td>
<td>-</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td><strong>Negative symptoms</strong></td>
<td>++</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>Minor physical abnormalities</strong></td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>Neuropsychological impairment</strong></td>
<td>++</td>
<td>+</td>
<td>?++</td>
</tr>
<tr>
<td><strong>Progressive cognitive deterioration</strong></td>
<td>-</td>
<td>-</td>
<td>++</td>
</tr>
<tr>
<td><strong>Brain structure abnormalities</strong></td>
<td>-</td>
<td>-</td>
<td>++</td>
</tr>
<tr>
<td><strong>Family history of schizophrenia</strong></td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>Early childhood maladjustment</strong></td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>Daily neuroleptic dose</strong></td>
<td>++</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td><strong>Risk of tardive dyskinesia</strong></td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
</tbody>
</table>

Adapted from Palmer et al., 2001. EOS: early onset schizophrenia, LOS: late onset schizophrenia, VLOSLP: very late onset schizophrenia like psychosis.
<table>
<thead>
<tr>
<th>Psychosis of AD</th>
<th>Late-Life Schizophrenia</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-50% prevalence</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Bizarre delusions rare</td>
<td>Bizarre delusions frequent</td>
</tr>
<tr>
<td>Misidentifications common</td>
<td>Misidentifications rare</td>
</tr>
<tr>
<td>Mostly visual hallucinations</td>
<td>Mostly auditory hallucinations</td>
</tr>
<tr>
<td>First rank symptoms rare</td>
<td>First rank symptoms common</td>
</tr>
<tr>
<td>Suicidality rare</td>
<td>Suicidality frequent</td>
</tr>
<tr>
<td>Past history rare</td>
<td>Past history common</td>
</tr>
<tr>
<td>Remission frequent</td>
<td>Remission uncommon</td>
</tr>
<tr>
<td>Need for maintenance rare</td>
<td>Need for maintenance common</td>
</tr>
<tr>
<td>Antipsychotic doses low</td>
<td>Antipsychotic doses moderate</td>
</tr>
</tbody>
</table>

A 68 year old widow was brought to the emergency room by the police after being arrested for physically assaulting the receptionist at her doctor’s office. When seen, she demanded to be allowed to go back to her lover immediately. She was convinced that she had been having an affair with her doctor for a number of years and the receptionist was not letting her see him. She was also convinced that she was pregnant with his child. On further inquiry, it was discovered that the lady had been trying to make sexual advances towards her doctor by writing obscene letters, making repeated phone calls, and turning up at his home at odd times. He had transferred her care to another doctor a few month ago, but she started coming to his office on a daily basis and insisting on seeing him. She was detained and admitted involuntarily under the mental health act, diagnosed with delusional disorder, erotomanic type and started on Olanzapine (5mg/d). On the ward, she was noted to have good social skills and her ability to perform both simple and complex every day activities was preserved, also she showed no signs of cognitive impairment. Her stay at the hospital was prolonged because the delusional beliefs took a long time to mitigate, although she never displayed aggressive behavior.

What are the most prominent differences to schizophrenia?
Delusional disorders

• Characterized by nonbizarre and circumscribed delusions, less frequent hallucinations (if at all) and relatively better preserved psychosocial functioning

• Persecutory illusions most commonly seen

• There are no separate diagnostic criteria for a specific delusional disorder in the elderly
• At least 6% of older individuals have paranoid symptoms such as persecutory delusions, but most of these individuals have a neurocognitive disorder (Chritenson and Blazer 1984)

• Lifetime prevalence of delusional disorder estimated to be 0.2% (APA, 2013)

• No significant gender differences

• First onset typically 40-49 years for men and 60-69 years for women

• Risk factors: family history of schizophrenia, avoidant, paranoid or schizoid personality disorder (Kendler and Davis, 1981)
DSM-5 Diagnostic criteria for delusional disorder (APA, 2013)

A. The presence of one or more delusions with a duration of 1 month or longer
B. Criterion A for schizophrenia has never been met
C. Apart from the impact of the delusions or its ramifications, functioning is not markedly impaired, and behavior is not obviously bizarre or odd
D. If manic or major depressive episodes have occurred, these have been brief relative to the duration of the delusional periods
E. The disturbance is not attributable to the physiological effects of a substance or another medical condition and is not better explained by another mental disorder, such as dysmorphic disorder or obsessive compulsive disorder
DSM-5 Diagnostic criteria for delusional disorder (APA, 2013)
Specify whether:
Erotomanic type
Grandiose type
Jealous type
Persecutory type
Somatic type
Mixed type
Unspecified type
Assessment and Diagnosis

• No evidence of gross impairment in general behavior
• Coherent and relevant speech
• Mood usually consistent with delusions
• Delusional content may be complex but more likely to be nonbizarre
• Cognitive function intact
• Lacking insight
• Information/history from relatives and friends important
• Risk of harm to self and others
• Differential diagnosis is very important
Differential diagnosis

- Delirium
- Cerebrovascular disease
- Neurodegenerative diseases (AD, Parkinson’s disease, frontotemporal dementia, Huntington’s disease)
- Substance abuse/ withdrawal
- Schizophrenia (chronic / late onset)
- Mood disorder
- Personality disorder (paranoid/obsessional)
Antipsychotic medications most widely used for early and late onset schizophrenia treatment of psychotic symptoms and agitation in old patients!

Evidence for improvement acute symptoms and relapse prevention (Jeste et al. 1996)

Newer atypical antipsychotics are currently considered the first line treatment for older patients owing to their better side-effect profile in comparison with conventional antipsychotics (Tune & Salzman, 2003)

However limited data from controlled trials showing efficacy and safety in older people!
• Usefulness of CBT techniques in modifying delusional beliefs and controlling hallucinations has been widely reported in younger people (Fowler et al. 1995)
• In elderly only a few studies!
• Aguera-Ortiz et al. (1999) suggested that they might help elderly people gain insight into their illness and provide them with coping strategies to help them live a meaningful life
• McQuaid et al (2000) development of a novel intervention for older people with schizophrenia that integrates CBT techniques and social skills training
Antipsychotics have numerous side effects in the elderly!

- Extrapyramidal side effects
  Pseudoparkinsonism
  Tardive dyskinesia (5 times higher risk through antipsychotics, Kane 1999)
- Anticholingeric effects
  urinary hesistance
  constipation
  blurred vision
  dryness of mouth
  delirium
- Sedation
- Hypersalivation
- Gastrointestinal effects
  nausea
  Constipation
  Diarrhoea
- Liver effects
- Cardiovascular effects (ECG abnormalities)
- Endocrine effects (weight gain, diabetes mellitus)
- Epilepsy