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MRCPsych General Adult Module

Psychosis 1

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Aims and Objectives

The overall aim is for the trainees to gain an overview of psychosis

By the end of the session, trainees should have an understanding of:

- the clinical presentation of psychotic illnesses
- aetiological theories and epidemiology of schizophrenia

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Expert Led Session

Schizophrenia: epidemiology and aetiological theories

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Contents

Epidemiology – methodological problems 1

Lack of diagnostic uniformity

- Improved with the advent on DSM-V & ICD-10 combined with standardised interview e.g. Present State Examination (PSE), etc

- Good reliability but issues with validity

Epidemiology – methodological problems 2

Case finding

- Most common: clinical case detection from hospital admission data, population surveys and follow-up studies of birth cohorts

- Various biases, pros and cons of each method

Epidemiology

- Low annual incidence: 0.16 – 1.00 / 1000 population
  (using broad definition; 2 to 3 times lower using DSM-IV or ICD-10 criteria)

- Relatively high prevalence: 5 per 1000 and lifetime morbid risk of 7.2 per 1000

- Worldwide lifetime prevalence approximately 1%

[Shorter Oxford Textbook of Psychiatry, 7th Ed.]

Epidemiology

- Fairly evenly distributed around the globe
- Age of onset: usually 15-54 years (but may start at *any* age). Two peaks – one at 20 years and one at 33 years.
- More common in men , male: female ratio is 1.4:1

[Shorter Oxford Textbook of Psychiatry, 7th

Epidemiology

- Lower socio-economic group: risk factor for schizophrenia (debated)

- Current literature emphasises a true ‘urban effect’: a high proportion of patients are born in inner cities or deprived areas and do not merely drift into them
  - *complex, many factors*

- Studies from different countries show that immigrants tend to have a higher risk of schizophrenia than the general population of either their native or their adopted country

[Seminar Series, General Adult Psychiatry, 2nd Ed]

Epidemiology

Relative Type	Lifetime risk
Monozygotic twin	48%
Dizygotic twin	17%
Sibling	9%
Half-sibling	6%
Child with one affected parent	17%
Child with two affected parents	46%

Schizophrenia liability based on affected relatives

[Oxford Handbook of Psychiatry, 7th Ed]

Aetiological factors and theories

Category	Examples
Genetic	Single Nucleotide polymorphisms, Copy number variation, rare variants
Early Enviornment	Maternal malnutrition and maternal infection, Birth Complications, Urban Birth
Social	Migration, Ethnic Migration Status
Hypothesis	Neurodevelopmental, Neurochemical, Dysconnectivity
Other	Early Cannabis use

Genetics

- Family, twin and adoption studies cumulatively provide irrefutable evidence for a major genetic contribution.

- Risk of Schizophrenia, Schizoaffective disorder, schizotypal and paranoid personality disorders is increased in first degree relatives of patients with schizophrenia thus supporting the concept of Schizophrenia Spectrum.

- Mode of Inheritance – cumulative effect of many genes, each of small effect; thus making it a polygenic or complex genetic disorder.

Schizophrenia Susceptibility Genes

Three types of genetic variations contribute to Schizophrenia risk.

1. Single nucleotide polymorphisms
2. Copy number variants – deletion of chromosome 22q11 (velocardiofacial syndrome)
3. Rare variants – rare single or dinuclueotide variants in individual genes; best example is of a gene called SETD1A

Enviornmental Factors

Factor	Relative Risk
Maternal Malnutrition	2
Birth Complications	2
Urban birth and upbringing	1.9
Childhood trauma and adversity	2.8
Being an immigrant	2.9
Cannabis Smoking	2
Winter Birth	1.1

Neurobiology

Brain Imaging

. Decreased brain volume

. Decreased intracranial volume

. Enlarged lateral and third ventricles

. Smaller Hippocampus and Thalamus

.Thinner cortical grey matter

.Altered white matter pathways

Neurobiology

Neuropathology

Decreased brain weight

Absence of neurodegenerative changes or gliosis

Reductions in synaptic and dendritic markers

Smaller pyramidal neurons in some areas

Fewer thalamic neurons

Neurochemical abnormality hypothesis

- Not fully attributable to any single neurotransmitter abnormality
- Dopaminergic overactivity
- Glutaminergic hypoactivity
- Serotonergic (5HT) overactivity
- Alpha- adrenergic overactivity
- GABA hypoactivity

Disconnection hypothesis

- SPET, PET, fMRI scans
- Widespread reduction of grey matter (particularly temporal lobe)
- Disorder of memory and frontal lobe function on a background of widespread cognitive abnormalities
- Reduced correlation between frontal and temporal blood flow on specific cognitive tasks
- Reduction in white matter integrity in tracts connecting the frontal and temporal lobes

Neurodevelopmental hypothesis

Findings supporting the neurodevelopmental hypothesis

- Structural brain changes present at or before illness onset
- Motor cognitive and social impairments in children who later develop schizophrenia
- Enviornmental risk factors relating to prenatal and perinatal period
- Soft neurological signs at presentation

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Any questions?

Thank you….. MCQs are next....

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MCQs

1. A long duration of untreated psychosis is strongly associated with which of the following:

A. Ethnicity

B. Insidious onset

C. Level of Education

D. Living alone

E. Rural residence

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MCQs

1. A long duration of untreated psychosis is strongly associated with which of the following:

A. Ethnicity

B. **Insidious onset**

C. Level of Education

D. Living alone

E. Rural residence

Ref: Clinical and social determinants of DUP in episode psychosis study. Morgan et al, 2014, BJPsych

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MCQs

2. What is the most likely long term effect of delirium:

   A. Accelerated decline in cognition and function
   B. Better physical outcomes in future
   C. Increased chance of late-onset psychosis
   D. Increased hospital readmission rates
   E. Increased likelihood of future episodes of delirium

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MCQs

2. What is the most likely long term effect of delirium:

   A. **Accelerated decline in cognition and function**
   B. Better physical outcomes in future.
   C. Increased chance of late-onset psychosis.
   D. Increased hospital readmission rates
   E. Increased likelihood of future episodes of delirium

Ref: Oxford textbook of OA Psychiatry (2008) p 512-3

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MCQs

3. Which of the following depot antipsychotics has a mandatory requirement of observing the patient for at least 3 hours after administration in a hospital setting :

A. Fluphenazine decanoate

B. Olanzapine embonate

C. Paliperidone palmitate

D. Pipothiazine palmitate

E. Aripiprazole maintena

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MCQs

3. Which of the following depot antipsychotics has a mandatory requirement of observing the patient for at least 3 hours after administration in a hospital setting :

A. Fluphenazine Decanoate

B. **Olanzapine embonate**

C. Paliperidone palmitate

D. Pipothiazine palmitate

E. Aripiprazole maintena

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MCQs

4. Which of the following statements is FALSE about ICD-10 criteria of schizophrenia:

A. Symptoms must be present for at least 6 months

B. Neologism is included in the symptoms

C. Organic brain disorder, alcohol and drug related intoxication, dependence or withdrawal are exclusion criteria

D. One of the criteria is: persistent hallucinations in any modality, when accompanied by delusions (fleeting or half-formed), without clear affective content, or when accompanied by persistent overvalued ideas

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MCQs

4. Which of the following statements is FALSE about ICD-10 criteria of schizophrenia:

A. Symptoms must be present for at least 6 months

B. Neologism is included in the symptoms

C. Organic brain disorder, alcohol and drug related intoxication, dependence or withdrawal are exclusion criteria

D. One of the criteria is: persistent hallucinations in any modality, when accompanied by delusions (fleeting or half-formed), without clear affective content, or when accompanied by persistent overvalued ideas

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MCQs

5. Which of the following antipsychotic has least effect on QTc interval:

A. Aripiprazole

B. Quetiapine

C. Risperidone

D. Sulpiride

E. Olanzapine

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MCQs

5. Which of the following antipsychotic has least effect on QTc interval:

A. Aripiprazole

B. Quetiapine

C. Risperidone

D. Sulpiride

E. Olanzapine

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Any questions?

Thank you

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References & further reading

- Gelder M, Andreason N, Lopez-Ibor J, Geddes J (Eds.) 2012. New Oxford textbook of Psychiatry. Oxford University Press

- Stein G & Wilkinson G (Eds.) 2007. Seminars in General Adult Psychiatry (2nd Ed). The Royal College of Psychiatrists. Gaskell, London

- Semple D & Smyth R (Eds.) 2013. Oxford Handbook of Psychiatry. Oxford University Press

- Tiwari AK, Zai CC, Muller DJ, Kennedy JL (2010) Genetics in Schizophrenia: where are we and what next? Dialogues Clin Neurosci 12(3) 289-303.