Transition to psychosis in Cannabis abusers

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No conflict of interest

Transition to psychosis in Cannabis abusers
Cannabis and Psychosis

- 50-80%
- Ultra high risk candidates & Early psychosis
- Early phase or first episode schizophrenia
- Multifactorial along with Psychosocial factors
- Social determinants of health (SDH)
- Ethnic and geographical differences

Pathway to psychosis in cannabis abusers: understanding

- Consensus
- Controversies
- Hypothesis
- Causal relationship
- Important Considerations in this transition:
  - Timeline, Severity, Candidate, & the Substance


The question to question?

- Sequential multifactorial changes which can explain transition to psychosis across developmental period.
- Factors like: individual characteristics, environmental, and neurobiological.
- Determine therapeutic and preventive interventions.
Proposed model

- Emphasizes the interaction between genetic and environmental variables, and their influence on neurodevelopment

Development of psychopathology


Structural and functional changes: MRI, fMRI

Neurochemical changes

Psychological & environmental factors
Main theme

It seems that neurobiological changes and the age at which these changes occur in cannabis related – psychosis are parallel or similar to those occurring in schizophrenia.

Abstract/ Summary

No vulnerability (1)

Biological vulnerability

Genetic studies (2)

Cannabis induced neurobiological changes

Seen in neurochemical and neuroimaging (3)

Cognitive dysfunction (4)

Seen in memory, executive function, information processing

Cognitive dysmetria (4)

Excessive THC

Psychosocial stress & environmental event

External biological events (5)


Risk factors and Psychopathology
Vulnerability: biological and psychosocial

- **Biological Unmasking**
  - Genotype

- **Environmental Unmasking**
  - Behavioral traits-correlates
  - Brain vulnerability

- **Psychosocial unmasking**
  - Life style factors
  - Risk factors
  - Essential etiological factors

- **Neurochemical Outcome**
  - Dopamine
  - Serotonin

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Transition to psychopathology

- Biological factors
- Psychological factors
- Social factors
- Environmental factors

Influenced by a number of factors
However not clearly known

Causes of symptom selection is ‘unknown’

A psychiatric illness

Behavioral traits
Psychopathology

Symptoms

??
??
??

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Candidate who develops psychosis

- Vulnerable and Non-vulnerable
- Multiple groups of Endophenotype,
  - Epidemiological,
  - Biological,
  - Cognitive
- There are people with different genetic background –
  - COMT and other genetic markers
  - Twin study –
  - Family history


Time line

• Consumption at which age leads to psychosis?
• Consumption and development of symptoms:
  ▫ early age consumption and early psychosis,
  ▫ early age consumption and later onset psychosis,
  ▫ later age consumption and psychosis,
  ▫ later age consumption and no psychosis
• Prenatal consumption and Psychosis

Substance

- High potency
- Dose
- Duration
- Nature of plant
- Nature of metabolite

Age spectrum up to 22-25 years remains vulnerable/sensitive

Gene Environment Interaction

**COMT**

Novel hypotheses role of cannabinoids on Neurodevelopmental - being studied

What changes occur?

- Brain development
- Genetic – COMT
- Neurochemical changes
- Functional and structural changes
- Cognitive changes
- Dopamine
- Neuroplasticity
- THC, Cannabinoid legends & receptor

• CB Receptor
• Cannabinoids

Brain Changes

Cognitive dyscontrol

• Executive function
• Information processing

Behavioral Changes

• Dopamine
• 5 HT

Age spectrum
• Biological
• Endophenotype
• Gene
• PFC
• Amygdala

Brain Maturation
• CB Receptor
• Cannabinoids

Brain Changes

Cognitive dyscontrol

• Executive function
• Information processing

Behavioral Changes

• Dopamine
• 5 HT

Age spectrum
• Biological
• Endophenotype
• Gene
• PFC
• Amygdala

Brain Maturation
Clinical syndromes

Psychotic disorder

- Psychosis NOS
- Substance abuse psychosis
- Schizophrenia spectrum

Transient psychotic episodes

- Florid psychosis
- Schizophrenia, like psychosis

Sub clinical symptoms appear?

ARMS

Affective disorder

Anxiety disorder

Clinical Syndromes

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Severity of psychopathology:

- Neurobiological changes are likely to be independent to severity of psychopathology

- No proportionate relationship with brain changes or any other factor
Final statement

• Overall maximum possibility is that ‘in a select group, consumption of low or high potency cannabis, mostly at an early age while neurodevelopment is going on increases propensity of psychiatric symptoms which would mostly start at a later-age under-influence of specific or nonspecific psychosocial stressful conditions.
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