TITLE: THE RELATIONSHIP BETWEEN CHILDHOOD TRAUMA AND DEVELOPMENT OF SCHIZOPHRENIA

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Abstract

Schizophrenia is a chronic mental illness affecting 3.3 per 1,000 persons globally. The role of genetics and substances in the development of the condition has been widely discussed. This paper focuses on exploring the relationship between childhood trauma and the development of schizophrenia.

Keywords: schizophrenia; childhood trauma; aetiology

Introduction

Schizophrenia is a chronic psychiatric illness with presence of delusions, hallucinations, disorganised speech and/or behaviour and negative symptoms. It is mental health disease with low prevalence of 3.3 per 1,000 persons. In 2013, schizophrenia was ranked as the 11th leading cause of disability globally (Teoh SL, et al. 2017).

As in other mental illnesses, the cause of the condition cannot be pinpointed to one factor. The most likely scenario is that a few factors interact with one another and play some role on the development of this condition. The role of genetics that predisposes a person to getting schizophrenia and the role of substances such as cannabis in precipitating the condition has been widely discussed. However, the role of social factors such as childhood trauma in the development of schizophrenia has not. The aim of this paper is to discuss the relationship between childhood trauma and the development of schizophrenia.

Case Summary

Ms. A, a 66-year-old Indian lady was diagnosed with schizophrenia 30 years ago. She is at present maintained with medications. However, she is frequently readmitted due to relapse.

She is married and has 5 children. She currently lives with her husband and her youngest son, who also has a diagnosis of schizophrenia. Her husband is verbally abusive towards her and the son. He is frequently yelling at them, punishing them for being “abnormal”. Her youngest son had just been released from prison for attacking her husband. The patient also has history of abuse as a child, in which her father was physically and verbally abusive towards patient and her mother.
Discussion

The development of schizophrenia itself has been associated with various different causes. The dopamine hypothesis has been the most accepted as recent researches in people at risk of developing schizophrenia had increased capacity of striatal dopamine synthesis and high release of dopamine to stress (Howes O, et al. 2017). In addition to that, the bio-psycho-social model is comprehensive as it covers all aspects of biological, psychological and social factors. Prenatal factors such as genetic and obstetric complications contribute to the development of this mental illness. Other external factors include exposure to poor environment. Examples of such environments are frequent social stress and isolation during childhood (Cannon T.D, 2015). In another research by (Schmitt, et al. in 2014), it has been proven that any form of neurodevelopmental mishap during perinatal period may be the cause of neuronal dysfunction and increased brain vulnerability to stress and later on psychosocial stress and abuse of drug may then trigger the mental disorder. Moreover, neurodevelopmental issues, usage of cannabis, migration/ race minority status and urbanicity have been proven to increase the likeliness of developing schizophrenia. Acute stress also has a huge role in the trigger of psychosis. Impaired stress tolerance on the other hand is associated with prodromal symptoms of schizophrenia (Howes O, et al. 2016). Current study shows that several hits in the aspect of genetic and environmental risk factors may interact in a complicated way during duration of neurodevelopment and cumulate in the form of a disorder. These risk factors may be use as hypothesis to common psychiatric disorder including schizophrenia (Davis, et al. 2016).

Childhood trauma is a problem we face globally that brings immediate negative consequences and long-term effects on overall physical and mental health (Brennenstuhl, et al. 2015). The WHO surveys suggest that more than one over three of the population experienced some kind of childhood trauma (Kessler, et al. 2010). Furthermore, analyses show that childhood trauma may be the contributor for the incidence of mental health issues in 28.9% of psychiatric patients and the aftermath of these traumas may last throughout the whole course of their life (Kessler, et al. 2010). There were also strong relationship between childhood adversity and symptoms of psychosis (DeRosse, et al. 2014). In 2013, Kelleher, et al. proposed the relationship of childhood maltreatment and incidence of psychosis. It suggests that cessation of trauma in childhood lowers the chances of developing psychotic symptoms. Hence, it can be see that childhood trauma is very crucial and plays huge role in normal development of a child.

The neural diathesis-stress model states that stress upon pre-existing state of vulnerability would trigger schizophrenic symptoms (Walker, et al. 1997). As stated, childhood trauma would be a form of additional stress to the already existing vulnerability in the form of family history or perinatal complications. Even in the case of absence of vulnerable state, childhood trauma alone may contribute as the sole reason for the development of schizophrenia. The pathophysiology between childhood trauma and schizophrenia may be divided into 3 main components. These are the neurobiological, genetic and epigenetic pathways (Popovic, et al. 2019). In the neurobiological pathway, dysregulation of hypothalamic-pituitary-adrenal (HPA) axis and BDNF signalling would cause reduction of GM in brain regions. This would lead to disorganisation, impaired memory function, attention deficits and low outcome of treatment. Next, the genetic pathway affects specifically the hippocampal area as GM reduction occurs. This would then lead to cognitive deficits and negative and affective symptoms. Similarly, the epigenetic pathway reduces GM levels in the hippocampal and prefrontal regions by increasing HDAC1 levels. The end result would be memory impairment.
and deficit of inhibition. Furthermore, childhood abuse or trauma may lead to genome-environment interactions which are mediated by processes such as methylation of DNA and modifications of histone (Fischer, 2014). In a study by (Misiak, et al. 2015), a patient with history of childhood trauma who developed schizophrenia was found to have hypomethylation of repetitive DNA sequences. Histone deacetylases (HDAC) inhibitors were proposed to enhance cognition and the pathogenesis of ameliorate disorder in psychiatric disorders like schizophrenia (Nestler, et al. 2016). Another research proves that childhood trauma causes high levels of HDAC1 in blood (Bahari-Javan, et al. 2017) which corresponds to the epigenetic pathway discussed.

Assumption can be made that childhood trauma is a severe form of stress that makes people at risk of schizophrenia. An 18 case-control studies meta-analysis proves that unpleasant childhood experiences significantly increases the risk of psychosis and schizophrenia (Varese, et al. 2012). On top of that, epidemiological studies show that early stressful situations such as neglect and abuse in childhood make an individual more susceptible to developing schizophrenia (Bonoldi, et al. 2013). (Larsson, et al. 2013) says that the most frequent type of trauma in patients with schizophrenia was emotional neglect. However, rates of physical abuse and neglect were also high. Abuse and neglect during childhood and adolescence have negative effects on cognition in patients with psychiatric illness such as as schizophrenia and bipolar disorder (Shannon, et al. 2011). Delayed memory and poor attention has been negatively associated with physical neglect in patients with schizophrenia (Li, et al. 2017).

In conclusion, it is proven that early psychosocial stress in the form of childhood trauma correlates with the development of schizophrenia later on in life. Therefore, childhood trauma is it emotional or physical neglect and/ or abuse must be taken seriously in the medical setting especially in the mental health division. Proper identification and coping skills should be introduced to victims of childhood trauma to reduce the risk of developing the disorder.

References


