

A Family with Unusual Genetic Penetration : Case Report

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Background

Mental illnesses are multifactorial illnesses caused by the interaction of various genetic and environmental factors that may include a reaction to environmental stresses, genetic factors, biochemical imbalances, or a combination of these (Department of Human Genetics, EMORY University, 2008). Multiple lines of evidence suggest that the roles of genetic and environmental factors depend on each other (Uher, 2014). Sons and daughters of parents with mental illness are more vulnerable to the effects of prenatal and postnatal environmental exposures, suggesting that the expression of genetic liability depends on environment. Gene-environment interactions reflect a causal mechanism where one or more genetic variants and one or more environmental factors contribute to the causation of a condition in the same individual with the genetic factors influencing the sensitivity to environmental exposures (Uher, 2014).

Aim

The aim of the report is to share the presentation of different psychiatric disorders in generations of a family which demands further attention to find out the causative genetic association.

Case

A 31 year old male, unmarried, studied up to class eight, unemployed, muslim, non smoker, with average intelligence, hailing from the Dhaka with lower-middle economic background was diagnosed as a case of Schizophrenia. He has very strong family history of mental illness more prominent in male and persistent in generations. Males were affected by schizophrenia, personality disorder and substance related disorder, whereas only one female was affected by depression with suicide. In the patient's generation, two males were affected with schizophrenia, two male with personality disorder and two with substance related disorder without any presentation in female. In previous generation one male was affected with personality disorder (Father) and one female was suicide committer due to depression (Aunt). There was also presence of male psychotic patients in the grandmother's family of the patient.

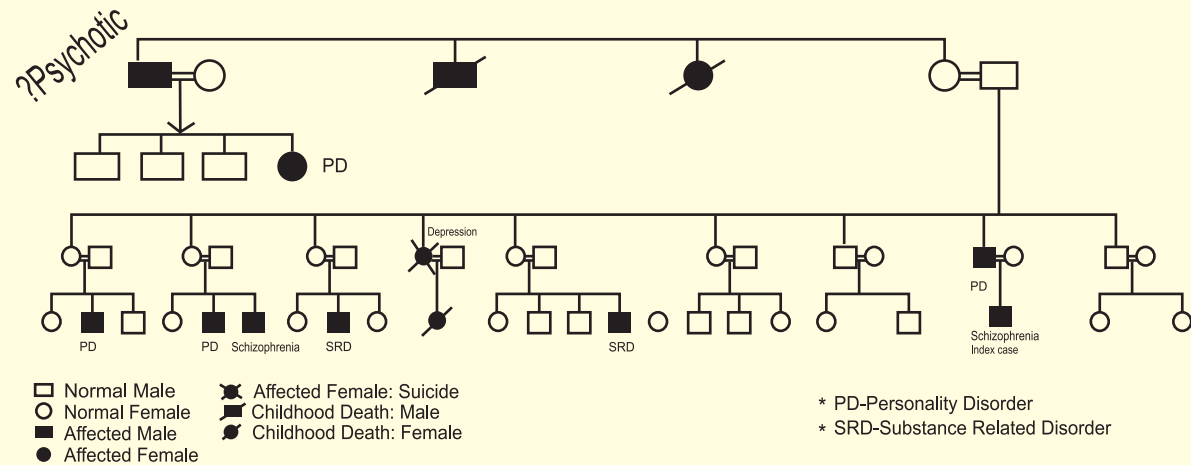


Figure 1. Family tree showing the genetic penetration in generations.

Discussion

It has been known for decades that mental illness runs in families, and twin studies have produced heritability estimates ranging from 0.37 to 0.90 (Uher, 2013). Here presentation of mental disorders is different with high penetration in male and relatively safer state in female in the consecutive three generations. Males are affected by schizophrenia, personality disorder and substance abuse whereas; only one female was affected by the major depression with suicide. In the current generation of the family, there are two males with schizophrenia, two male with personality disorder, two males with substance related disorder with none of the female offspring being affected. In the previous generation there was one personality disorder male patient and one female suicide committer due to depression, and in generation before that there was one male psychotic patient but no female sufferer. MacKinnon reviewed a book in 2012 titled: "A lethal Inheritance: A mother uncovers the science behind three generations of mental illness" by Victoria Costello. From the report, it was found that Ms. Costello's sons, sister, father, grandfather, and herself suffered from mental illness and this happened in the late 1990s. There among the writer's two sons, the elder one, suffered from schizophrenia and the younger one suffered from depression. The writer suffered from depression with suicidal ideation and her sister died from complications of long-term drug abuse. Her father was alcoholic and her grandfather died a mysterious, violent death on the railroad tracks. This pattern of presentation of mental disorders in the reported family reveals strong genetic linkage in the psychiatric disorders. In Bangladesh, absence of such genetic analysis limits the final opinion. Moreover, every affected person was not interviewed directly as information gathered retrospectively, though most of diagnoses were confirmed by a consultant psychiatrist, and few are confirmed by a registered Physician.

Conclusion

Family, twin and adoption studies have shown that, for schizophrenia, autism, manic depressive illness, major depression, attention deficit hyperactivity disorder, panic disorder and other mental illnesses, the transmission of risk was heredity. This report strongly demands further steps to search for any common genetic link between different mental illnesses running in the family through generations.

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