



I7 A Psychopathologic and Etiologic Analysis of Psychopathic Traits in Klinefelter Syndrome

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Learning Overview: The goal of this presentation is to provide an understanding of psychopathic traits in Klinefelter syndrome and to analyze their etiologic and psychopathologic components.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by improving the general comprehension of genetic and epigenetic mechanisms in psychopathy.

Klinefelter Syndrome (KS) (also known as 47, XXY) is the most common aneuploidy (1/650) of sexual chromosome abnormalities among males (0.1% to 0.2% of the male population). This syndrome is largely underdiagnosed because of a large phenotypic variability. Physical (tall, sparse hairiness, gynecomastia), hormonal (hypogonadism with low testosterone levels), and psychological symptoms (normal to low average total Intelligence Quotient (IQ), low verbal IQ, various cognitive symptoms) are commonly described, as are high levels of psychiatric comorbidities, including aggressiveness. Higher risks of committing sexual crimes and arson (compared to criminal controls) was recently depicted.¹ However, because of the small prevalence of persons involved, only a few studies provide quantitative or qualitative robust results on forensic populations.

A small sample of KS, including three male adult inpatients presenting aggressive or violent symptoms or criminal history, were recruited in Belgium and France to assess their psychopathic traits using the Psychopathy Checklist-Revised (PCL-R) of Hare.² First, results showed weak scores on facet 1 (interpersonal). However, scores assessing affective traits (facet 2), lifestyle, especially impulsivity (facet 3), and antisocial traits (facet 4), as well as item 11 (promiscuous sexual behavior) seemed higher.

Results could be related to characteristic genetic features with consequences on neural development (limbic system and temporal lobe abnormal cortical volume, hemispheric specialization shortcoming). These involve alterations of both complex cerebral (attention, empathy), and behavioral regulation functions (inhibition, mental flexibility, emotional response modulation, control of own actions).^{3,4}

Interestingly, some similar findings also underlie current etiologic and psychopathologic hypotheses of psychopathy.^{5,6} Nevertheless, double diagnosis is scarce among KS. In addition, some KS features are antagonistic with those hypotheses (e.g., testosterone levels) without prohibiting clinical psychopathic traits among KS.^{7,8}

Given these discrepancies, the well-documented syndrome of KS, which allows reasoning on both genetic and epigenetic mechanisms, also introduces the concepts of adaptability and neuronal ecology, which may clarify murky interactions of biological, psychological, and social factors entangled in the development of psychopathy.

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Klinefelter Syndrome, Psychopathy, Psychopathology