I32 Neurobiology of Psychopathy: Developments and Directions

Arin Abnoosian, MD, 249 N Brand Boulevard, #312, Glendale, CA 91203; and Michael Cummings, MD, California Department of State Hospitals, Patton State Hospital, 3102 E Highland Avenue, Patton, CA 92369*

After attending this presentation, attendees will: (1) be able to discuss the hypothesized biological elements of psychopathy; (2) have an understanding of the frontotemporal structures and neural networks involved in psychopathy as suggested by genetic, electrophysiological, imaging, and psychopharmacological data; and, (3) be able to discuss the implications of current data for future research and treatment directions.

This presentation will impact the forensic science community by providing a better understanding of how the neurobiology of psychopathy may guide development of effective preventive strategies and treatments. Effective prevention and treatment strategies are of critical importance and interest given the suffering and costs imposed by psychopathic individuals, especially noting that even with increased use of confinement, most such incarcerated persons return to the community.

Psychopathic individuals inflict substantial predatory and impulsive violence. Presently, the principle interventions used to reduce this harm have been confinement and execution. Nevertheless, most psychopathic persons return to the community, giving rise to a need for more effective interventions and treatments. Recent advances in the understanding of the neurobiology of psychopathy hold promise for new research directions and better approaches to treating such individuals. This presentation will review advances in genetics, electrophysiology, imaging, and psychopharmacology relevant to psychopathy with consideration of implications for directions in further research and treatment.

Moreover, the underlying biological elements relevant to developing and sustaining psychopathy will be discussed. Frontal and temporal lobe neural network functions will be reviewed, with attention to specific structures, (e.g., the amygdala, temporal lobe poles, the ventromedial prefrontal cortex, the frontal mirror neuron networks, the fusiform gyrus, and the cingulate gyrus). Additionally, the involvement of temporal lobe and prefrontal cortical signaling, via the uncinate fasciculus, in processing of negative emotional consequences will be discussed. The emergent neurobiological model will then be considered in relation to characteristics derived from factor analysis of the Psychopathy Checklist-Revised (PCL-R), (i.e., interpersonal deficits (impaired affiliative attachments), affective deficits (diminished fear response and impaired empathy), antisocial lifestyle (lack of prosocial goals and deviant behaviors), and antisocial acts (callous disregard for the rights or welfare of others)).

Finally, child-rearing approaches which may promote prosocial development among those harboring the biological substrate for psychopathy will be discussed, as will current psychosocial treatments (e.g., the Risk-Needs-Responsivity model), and preliminary data regarding psychopathic responses to relatively low plasma concentrations of clozapine (glutamatergic novel or atypical antipsychotic). These current data will be considered with respect to directions for future treatment research.

Psychopathy Neurobiology, Psychopathy, Antisocial Personality

*Presenting Author