

**Aggression and Violence – “a Journey Through the Human Brain”**

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**Introduction:** Interpersonal violence is a major cause of mortality, and morbidity, constituting a serious social concern. The underlying causes of human aggression and violence are certainly multifactorial, although patients with a variety of psychiatric disorders including, but not limited to, personality disorders are at increased risk for developing aggression. It is thus important to understand the neurobiology of aggression, particularly maladaptive aggression.

**Objectives:** Better understand the neurobiology of aggression, particularly pathological forms of impulsive aggression, by discussing the circuitry, both cortical and subcortical, as well as the role of neuromodulators.

**Aims:** Understand the neurobiology of aggression, particularly maladaptive aggression.

**Methods:** Literature review on the subject, PubMed was searched using the search terms neurobiology, neuroimaging, violence, aggression.

**Results:** The failure of 'top-down' control systems in the pre-frontal cortex to modulate aggressive acts that are triggered by anger provoking stimuli appears to play an important role. An imbalance between prefrontal regulatory influences and hyper-responsivity of the amygdala and other limbic regions involved in affective evaluation are implicated. Insufficient serotonergic facilitation of 'top-down' control, excessive catecholaminergic stimulation, and sub-cortical imbalances of glutamatergic/gabaminergic systems as well as pathology in neuropeptide systems involved in the regulation of affiliative behavior may contribute to abnormalities in this circuitry.

**Conclusions:** Considerable progress is being made in understanding the neurobiological bases of human adaptive and maladaptive aggression.

Thus, the advances already made can contribute meaningfully to a rational assessment and treatment of individuals with pathological aggression and a predisposition to violence.