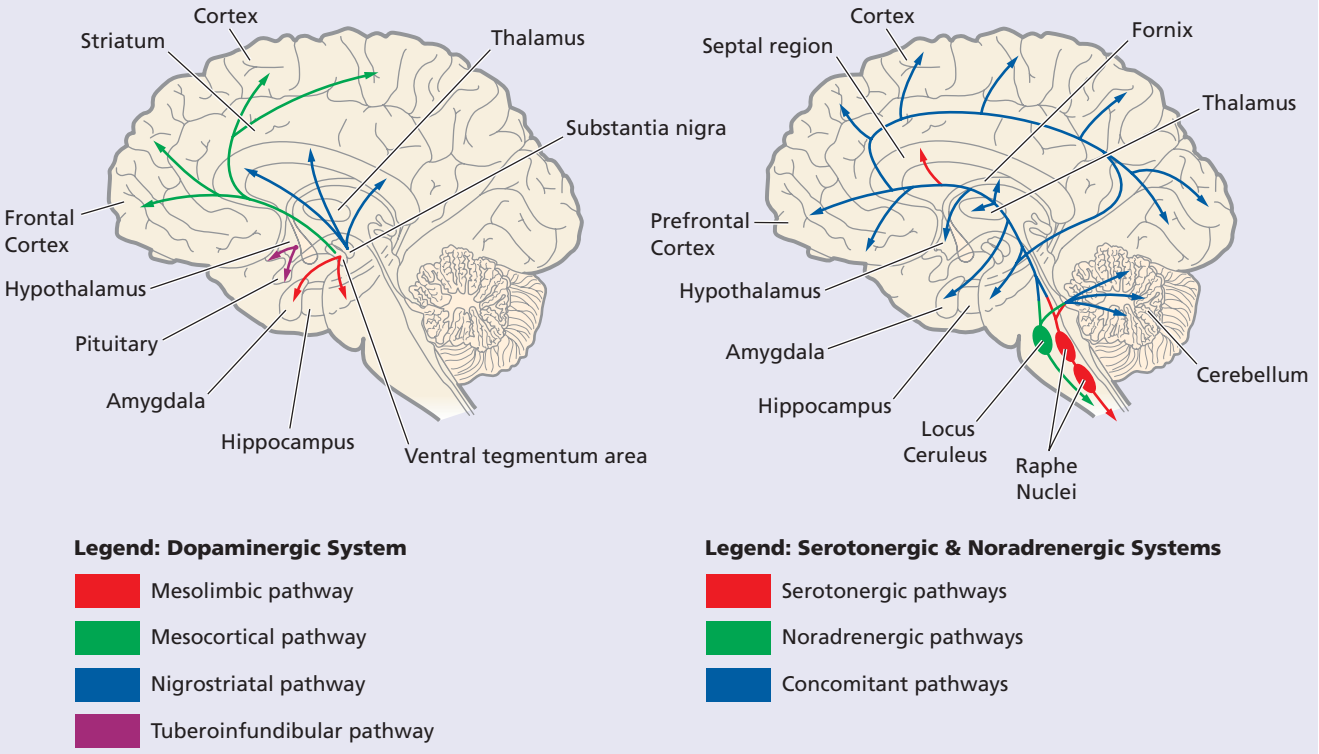
© 2006. Townsend MC. Psychiatric Mental Health Nursing: Concepts of Care in Evidence-Based Practice, 5th ed. Philadelphia, PA. F. A. Davis Company.



Neurotransmitters

Neurotransmitters that have been implicated in the etiology of aggression and violence include decreases in serotonin, and increases in norepinephrine and dopamine (Siever, 2002; Tardiff, 2003).

Associated Areas of the Brain

- Limbic structures: Emotional alterations
- Prefrontal & frontal cortices: Modulation of social judgment
- Amygdala: Anxiety, rage, fear
- Hypothalamus: Stimulates sympathetic nervous system in "fight-or-flight" response
- Hippocampus: Learning and memory

Medications used to Modulate Aggression

1. Studies have suggested that selective serotonin reuptake inhibitors (SSRIs) may reduce irritability and aggression consistent with the hypothesis of reduced serotonergic activity in aggression.
2. Mood stabilizers that dampen limbic irritability may be important in reducing the susceptibility to react to provocation or threatening stimuli by overactivation of limbic system structures such as the amygdala (Siever, 2002). Carbamazepine (Tegretol), phenytoin (Dilantin), and divalproex sodium (Depakote) have yielded positive results. Lithium has also been used effectively in violent individuals (Tardiff, 2003).
3. Anti-adrenergic agents such as β-blockers (e.g., propranolol) have been shown to reduce aggression in some individuals, presumably by dampening excessive noradrenergic activity (Siever, 2002).
4. In their ability to modulate excessive dopaminergic activity, antipsychotics—both typical and atypical—have been helpful in the control of aggression and violence, particularly in individuals with co-morbid psychosis.

FIGURE 40–1 Neurobiology of violence.