1750–1800

11 June—030. RAGE AND VIOLENCE: MECHANISM AND MODULATION

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Introduction: The recent public media focus on violence in the United States and the Middle East has heightened awareness and interest in unprovoked anger and violence. Military personnel post closed head blast injury show personality changes, often violent behavior. An extensive review of the published literature points to the right orbital frontal cortex as the modulation area for control or down regulation of anger and rage. Patients with decreased function of the right orbital cortex from trauma, birth defects or developmental defects have been related to violent acts such as murder and attacks.

Materials/Methods: We selected an 18-year-old female with a history of birth trauma and a life long history of intermittent explosive disorder being committed for long term custodial care in a state mental hospital. We obtained IRB approval.

Increasing the activity of the orbital to reduce rage and aggression seemed difficult because of its location, large area, convoluted cortex, and the required open craniotomy. Our approach was to consider the output tracts from the orbital cortex to the mid-brain Limbic System as a more suitable target.

She was stereotacticly implanted with a single standard Medtronic DBS electrode into the right inferior internal capsule.

Results: Post operative stimulation revealed increased anger with high frequency blocking current. Low frequency activating current produced calming and markedly reduced the rage attacks.

Her attacks have been controlled for over 8 years and she has lived at home and at present with her fiancée with only minor adjustments in stimulation parameters and is drug free.

Discussion: The modulation of rage and violence suggested by fMRI, PET scanning and anatomical autopsy studies has now been confirmed by this "proof of concept" study in the human. This should lead to treatment of other wise refractory violent patients.

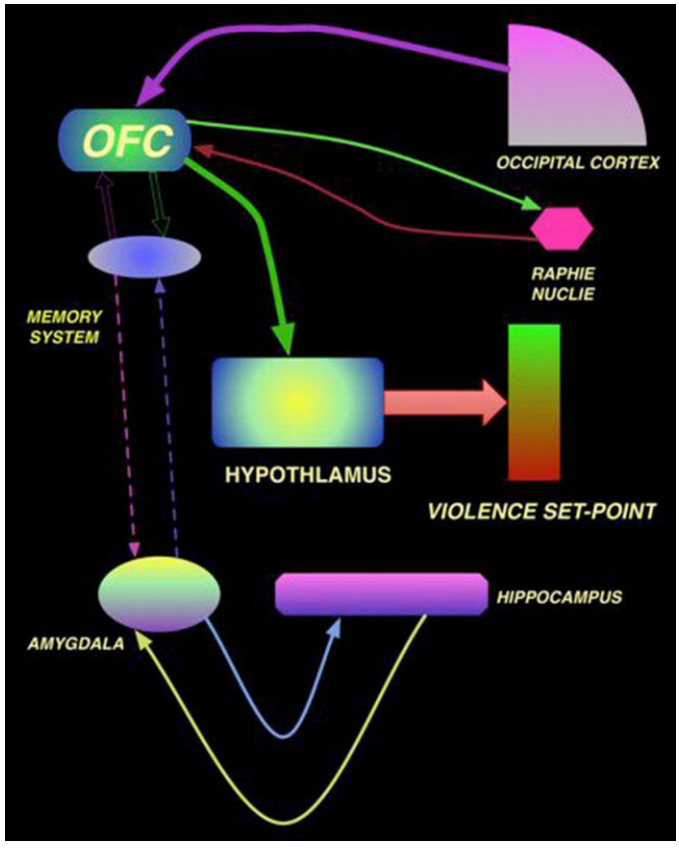
Conclusions: This case study supports our hypothesis regarding the control of violence by the right orbital frontal cortex and its projection to the limbic system and that activation of this pathway can reduce violent behavior in the human.

Keywords: Violence, Orbital frontal cortex, DBS

Objectives:

1. Test the theory that the orbital frontal cortex is related modulation of violence.
2. That activation of the out flow pathway from the orbital frontal cortex to the hypothalamus and limbic system is effective in down regulating agitation and violence.
3. That DBS can be used to control agitation and violent activity in patients with brain damage and rage attacks.

Conflict of Interest Disclosures and Acknowledgements:
I do not have any relevant financial relationships.



Theoretical pathway for interaction of orbital frontal cortex (OFC), memory and hypothalamus portion of limbic system to set fight or fear reaction.

