NEUROBIOLOGY AND SEXUAL DESIRE: Clinic and therapeutic issues

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INTRODUCTION

Although the brain is considered as the more important « sexual organ », the function of human brain in the emergence of the sexual response is not enough known. The extrapolability of new animal data to mankind is a problem.

Neurobiology

At present, many neuroscientific researches [1,2,4,8] allow us to understand the processes active in the sexual behaviors (emotional and cognitive). Indeed, the « loving modules » are located in four areas with particular functioning [1]. The circular cortex plays a part in emotions and feelings self-recognition (empathy), the insula integrate sensory informations, and some parts of caudate nucleus and putamen are active by sexual excitation (eroticism). Moreover, the love feelings seem to inactivate some cerebral areas participating in negative emotions (fear, sadness and angry) as the right temporal area and some parts of the amygdala complex.

NEUROCHEMISTRY

Sexual motivation and pleasure

DOPAMINE

Confirmation of good choice

ENDORPHINS

sense of good choice

OXYTOCIN

Molecular Triptych [5,8]

NEUROIMAGING

Hypothetical lesion in left gyrus rectus (colored in red), which inhibits the others areas essential for appearance of desires (colored in blue):

bilateral supplementary motor area (SMA)

Left ventral premotor area

Left precentral gyrus

Left inferior parietal lobule (IPL)

Pennefield’s Homunculus, recently showed by Kell et al. [3] with new fMRI data.

CLINIC ISSUES

Hypoactive sexual desire disorder [7]

- Initially, there is the inhibition of sexual desire secondary to an internal inhibition of the desire (unconscious psychological processes)
- Prevalence ≈ 1-15% population
- Variable duration: months or years
- Symptoms: not or few sexual fantasies, partial or total decrease of sexual desire
- With an impact on the quality of life (self-esteem) and some social consequences
- Disorder unexplained by the age and life personal context
- Lack of fantasmatism imagery (orbito-frontal cortex : OFC)
- Left gyrus rectus active in hypoactive sexual desire disorder (HSD)
- Left inferior parietal lobule (IPL) and putamen are active by sexual excitation
- Activity decreased in area involved in body movement imagination

Function Neuroimaging:

- Hypothesis: excessive unconscious inhibition of natural desires
- Affective traumatism
- Negative Experiences
- Education
- 2 types of impairments:
  - Excess of desire inhibition (orbito-frontal cortex : OFC)
  - Lack of fantasmatism imagery (parietal and premotor area)

THERAPEUTIC ISSUES

Erection disorder

Action target according to type of damaged phase of cycle

(restart, starting, maintained erection)

Hypoactive sexual desire disorder

- It remains accessible to technical psychotherapies. The latter include the identification of frustration periods obstructing to anticipate a pleasure experience and the behavioral-cognitive techniques (cerebral neuroplasticity)

CONCLUSIONS

- The loving marks appear in the brain. The brain influences our sexual desire. This influence can be done on the both senses: activation or inhibition.
- Our imagination can raise our desire (fantasies). But, our desire also depends on our education, our life experience and our current situation.
- Sexual desire could have two origins: either sensory organs, or imagination, or usually the both.

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