

The Laws of Bariatric Pheromonology

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Abstract

Pheromones are chemicals which help in communication between two or more members of a particular species. Studied in invertebrates, early vertebrates, and some plants, pheromones may serve as indication of alarm, food availability or reproductive/sexual status. In this opinion piece, we propose experience based "Laws of Bariatric Pheromonology", based upon phenomena that have been identified in reproductive endocrinology. We highlight the potential of neuroendocrine-social modulation of the obesity care ecosystem, in order to improve bariatric care.

Keywords: Obesity, overweight, pheromones, psychosocial, social health

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Introduction

Pheromones are a relatively lesser understood class of hormones. These are chemicals which help in communication between two or more members of a particular species. Studied in invertebrates, early vertebrates, and some plants, pheromones may serve as indication of alarm, food availability or reproductive/sexual status. Axillary steroids, vaginal aliphatic acids and vomeronasal organ stimulations have been postulated to work as pheromones in humans.

In this opinion piece, we discuss phenomena that have been identified in reproductive endocrinology, and assess their relevance to human bariatric care.

Coolidge Effect

The Coolidge effect describes the observation that men exhibit increased sexual interest whenever exposed to a new female of reproductive age group.¹ This is irrespective of availability of earlier female partners. A similar response, albeit of lesser degree, is noticed amongst females who are

introduced to new potential male partners. This effect is due to increased dopamine levels characterized by increased sexual responsiveness and shortened sexual refractory period. It facilitates multiple mating, thus allowing expansion of gene pool and survival of species.

In obesity care, Coolidge effect may be defined as an increased motivation to lose weight, using various lifestyle, dietary and pharmacological means, whenever interacting with new members of the obesity care team. Baro buddies,² too may fulfil the same need. This effect may be used to circumvent the metabolic set point, to motivate persons to lose weight, and to handle resistant/refractory obesity

Bruce Effect

The Bruce effect, also known as pregnancy block, is the term used to describe spontaneous termination of pregnancy that occurs in female rodents following exposure to an unfamiliar male scent.³ This is thought to be due to stimulation of the female vomeronasal organ by specific peptides that work through a vasopressin dependent pathway. Oxytocin plays a protective role, by allowing the female to sense her male partner's pheromones. From an evolutionary standpoint, this allows propagation of the gene pool through the fittest males.

In obesity management, the Bruce effect is observed as lack of response to hitherto effective weight management strategies. This may be because of multiple issues, including resistance to the weight reducing therapy or dissatisfaction with the weight management team. Another bariatric Bruce effect that we observe is the sudden loss of effect when a particular GLP1RA-based drug, preparation or delivery device is changed. The Bruce effect opens up another dimension to the metabolic setpoint, involving the anatomically (and functionally) contiguous posterior pituitary with the hypothalamus.

Lee-Boot Effect

Lee-Boot effect implies the suppression or slowing of oestrous cycles of mature female rodents kept in isolation from males.⁴ Thus pheromone-based phenomenon is associated with elevated prolactin and luteinizing hormone. In some ways, the Lee-Boot effect is similar to boarding school amenorrhea and pseudopregnancy.

For the person living with obesity, the converse of Lee Boot effect is therapeutically important. Attending mixed

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gender cookery and nutrition classes, joining mixed gender gyms and exercise groups, and interacting with a diverse spectrum of obesity care professionals as well as Baro buddies: these may be the way to better weight control.

Vandenbergh Effect

The Vandenbergh effect is noted in prepubertal female murine models which experience early induction of oestrous cycle (akin to precocious puberty) if exposed to the urine of a sexually mature male mouse.⁵ This pheromone-driven response leads to a surge in gonadotropin releasing ones, and may be due to estrogens secreted by the male.

Early exposure to the importance of weight management, i.e., a healthy lifestyle as part of primordial and primary prevention, may serve as a tool for preventing obesity, and its complications, at a later stage. The VandenBergh effect suggests that exposure to health-related messages, delivered by role models, may influence health related behaviour through neuroendocrine or pheromonal pathways.

Whitten Effect

The Whitten effect postulates that exposure to male murine urine leads to simultaneous oestrous amongst a group of female mice.⁶ This is due to the volatile pheromones contained in male urine. While there is inadequate evidence for a human vomeronasal organ, exposure to the 'scent' of a dominant trainer may facilitate simultaneous, and sustained, efforts at exercise, as well as other life style measure, in persons living with obesity. These efforts may lead to great success as well.

Mc Clintock or Wellesly Effect

These metonyms allude to menstrual synchrony that occurs in women who begin to live together in close proximity.⁷ Though research has not been able to confirm this hypothesis, or its pheromone-based physiology, the concept is relevant to weight management.

We postulate that people who live together in close proximity tend to achieve similar body mass index (BMI) over time. This is evident in studies of obesity in married couples, as well as friends and colleague.⁸

Discussion

Obesity management is best offered by a multidisciplinary, multimember, endocrinology led team.⁹ Obstacles and barriers to weight reduction are usually handled by changing therapeutic styles and strategies.¹⁰ Changing the ambience, or human company at the health care system, gymnasium or exercise facilities, and eating places may be equally important. As we learn more and more about the neuroendocrine influence on weight homeostasis, we realize that our knowledge is inadequate. The laws of bariatric pheromonology that we postulate may not be driven by pheromones, but are certainly neuroendocrinological in nature.

While our discussion in narrative and experiential, rather than evidence-based it does carry significance for modern obesity care. The laws of bariatric pheromonology are applicable to chronic care delivery as well. Especially in obesity, which requires sustained commitment and collaboration, the need for neurobehavioral optimization is omnipresent. We hope that this discussion helps improve the quality of our care, and this leads to healthier outcome in people living with obesity.

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