Absence Of Oestrus In H.sapiens ; Review Of Possible Causes And Suggested Explanation

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Abstract

One of the peculiarities of our species is that we have a menstrual cycle rather than an oestrus cycle. When women ovulate they do not have the extreme proactive sexual behavior which is found in the great majority of placental mammals. Oestrus itself is confined to the placental mammals. Vertebrates such as fish, amphibians, reptiles, and birds lack the trait. Oestrus is defined as "The periodic state of sexual excitement in the female of most mammals, excluding humans, that immediately precedes ovulation and during which the female is most receptive to mating; heat." (Note that the focus is on the behavior of oestrus rather than any other aspect, such as swellings and scent)

The questions arise then : what is oestrus and why is it absent in H.sapiens?
This paper proposes 1) that oestrus results from the arrangement of the genital structures in the pelvic floor of female placental mammals 2) the loss of oestrus resulted from a displacement of a structure in the pelvic floor of women.

Introduction

What makes us human?
The question perplexes us and attempts to explain our extraordinary rise in a relatively short period of time, have been many. So the purpose of this paper is to start at the most basic definition and to focus on an unique attribute: the absence of oestrus (heat).

Yet to explain the absence we must first know what it is that is missing. The paper lays out two tasks: the explanation for oestrus and then the way in which oestrus was lost.
No explanation of the loss of oestrus can make sense if we do not first explain how it works.
By oestrus is meant the behavior of the female. The other tokens of ovulation such as swellings and excretions and colour changes are subsidiary to the behavior itself.
The herdsman says that oestrus causes the female to stand for the male. This is acutely important because it reveals the difference between the vertebrates with oestrus and those without oestrus.
A female bird must be courted to induce her to mate with the male. Birds lack oestrus.
The stallion or bull has merely to be where the oestrus female is and she will mate with him.
Women, being human females, are in their mating behavior more akin to the bird than to the mare. A woman, like the female bird, can reject a suitor. She can say "No".
This freedom to choose has tremendous implications for all human behavior because it directly shapes our reproduction and hence, our evolution.
As Darwin clearly saw, humans are subject to Sexual Selection and that process requires the ability to select a mate rather than mate with any proximate male.

Methods

A search was made of the literature of biology to ascertain what science had determined to be the explanation of oestrus behavior.
Inquiry was made into the role of various hormones present during the fertility cycles of oestrus and non-oestrus species.
Anatomical comparisons and correlations of the pelvis and pelvic floor were made between representative placental mammals and H.sapiens; both female and male.
The history of medicine was, to the greatest extent possible, examined to determine if oestrus behavior had ever been seen in a woman.
The various structures in the female genitals of placental mammals were investigated and evaluated so as to determine their function in the oestrus female. The mare and the bitch, because of the wealth of study and information done on these companions of Man, were chosen as being representative of the placental mammal class, generally.

Review

Although we are defined as a species without oestrus, there is no explanation in the literature as to the actual mechanism that results in the intense sexual behavior
of the female in heat.

Oestrus is part of the fertility cycle in most placental mammals. The chemical steps in the fertility cycle are known, with the exception of oestrus behavior. Unless there is an unknown hormone which is acting to cause that behavior, we must look elsewhere for an explanation of oestrus.

Investigating the comparative anatomy of placental mammals reveals the similarities and differences. Most differences are of proportion rather than of kind. That is, all placental mammals have a basic anatomical pattern. This is modified, during fetal development, to produce the characteristics which define species. (The flipper of a seal corresponds to the leg of an antelope. The difference between the two is the result of expression of the genes during fetal development.)

Between humans and most other placental mammals there is a peculiar difference in the pelvic floor of the female. This difference results in our species being without oestrus behavior during our fertility cycle. The pelvic floor of humans contains the structures of elimination as well as those of generation. The pelvis itself is similar to a bony jar, supported on either side by the hips and legs, and supporting in turn the spine, through attachment at the sacrum.

In the female, the so-called external genitalia are found within the vulva and include the labia majora, labia minora, and clitoris as well as the entrance to the vagina. The urethral fossa lies between the clitoris above, and the vagina below.

The clitoris is an homolog to the male penis and duplicates it with the noticeable absence of the urethra. The clitoris is an elongated body containing copora cavernosa, similar in function to those bodies in the penis. Each is attached to the pubic symphysis of the pelvis by the crura; fibrous ligaments.

The terminating part of the clitoris is the Glans clitoridis, a spongy body which is the homolog to the Glans penis. Within this are, as in the penis, numerous encapsulated nerve endings which are Pacinian bodies. These unique structures respond to changes in pressure.

In the typical non-human female eutherian, such as a mare, there are significant differences in the architecture of the external female genitalia. The mare lacks the labia minora and possesses what is termed a mammalian vestibule which is probably histologically identical tissue as the labia minora. This circles the opening to the vagina.

Within the clitoris there exist a pair of structures called vestibular bulbs. These have a separate blood supply to the rest of the clitoris. They abut the Glans clitoridis. To understand their function one should look at the penis of the typical non-human eutherian and note the Bulbus glandis of the male. This is most noticeable in the dog when, during intromission, it swells and serves to lock the male in the female. The other function of that structure is to put pressure on the Glans penis and cause sexual excitation via the Pacinian bodies.

In the bitch and the mare, the vestibular bulbs inflate with blood when the animal ovulates, resulting in sexual excitation, again via the, Pacinian bodies of the Glans clitoridis. This is the excitement of oestrus and can be termed a mechanical excitement.

If the excitement were due to direct hormonal stimulation there would need to be an increase in serum testosterone throughout the period of heat. Testosterone is the only hormone capable of inducing such sexual excitation.

In fact, during oestrus in typical placental mammals such as the mare and the bitch, there is a decided drop in the testosterone levels.

The question of the absence of oestrus in Woman then becomes a simple case of the displacement of the vestibular bulbs, in an evolutionary sense. Factualy, they now reside on either side of the urethra, near the fossa, and quite outside of the clitoris.

**Discussion**

Vertebrates may predominantly be divided between those which have oestrus and those that do not. Those which have oestrus are placental mammals. Fish, amphibians, reptiles, and birds lack oestrus.

Within the placental mammals H.sapiens is conspicuous because of the absence of oestrus. Initially, the expectation of the researcher who wished to understand what causes an animal to go into heat, would direct attention to hormones. Indeed, hormones precipitate the cascade of reactions which is the fertility cycle of vertebrates.

Close examination of the linear sequence of the expression of hormones does not lead to any which can be directly responsible for the oestrus behavior. That behavior includes heightened sexual receptivity and the lordosis posture (raising the hindquarters). Testosterone, in male and female, can produce sexual excitation. In the female it does not induce lordosis.

The presence of elevated testosterone levels in the female will curtail her oestrus.

In other words, testosterone not only does not produce oestrus behavior but it inhibits it. No other hormone has been shown to produce oestrus
behavior. That being the case, we must look elsewhere for to find what brings about that behavior. The answer lies in the configuration of the genital structures in the pelvic floor of female placental mammals. In a representative placental mammal, the dog, there is a clear intimation of the answer sought. Bearing in mind that male and female anatomy largely mirror each other, an examination of the canine penis and canine clitoris reveals that homologous structures are present which can be seen to explain oestrus behavior. The bulbous glandis of the male and the vestibular bulbs of the female sit in similar positions on the penis and clitoris, respectively. These components of the penis/clitoris do not share the same blood supply as the other parts of the penis/clitoris. Being independent in that sense, they also both adjoin the glans wherein lie the Pacinian bodies and the center of sexual sensation of the genitals. Once inflated with blood, they put pressure on the respective glans and maintain the feeling of intense sexual as if there was a continuous orgasm. This is the oestrus sensation that is seen so clearly in oestrus behavior where a mother will abandon her young, go without food, and risk her life to engage in coitus with the male. Fortunately for our species, the hand of evolution has moved the vestibular bulbs out of the clitoris and down to a point near the urethral fossa. This displacement allows Woman to go through her fertility cycle without the insistent prod of oestrus driving her to mate with the nearest male.

Conclusion(s)

Oestrus was never concealed nor hidden in our species. Rather, it is completely absent due to the displacement, in an evolutionary sense, of the structures in the pelvic floor. This renders the mating behavior of H.sapiens unlike that of most other placental mammals as well as opening us up to the influence of classical Darwinian Sexual Selection.

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