

Endocrinology in the Ramayana

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ABSTRACT

This article is one of a series of publications which highlight the possible endocrine conditions and interventions listed in the ancient texts. This compendium lists episodes from the Indian epic Ramayana and from the associated genealogy of Lord Rama's dynasty, the Suryavanshis. These episodes are chosen for their relevance to endocrinology and are listed in a gland-based order. It is hoped that this communication will encourage further work on endocrine literary forensics.

Key words: Diabetes, endocrinology, India, infertility, Mahabharata, osteoporosis, Rama

INTRODUCTION

The Ramayana has varied meanings for various people. Scripture, literature, religion, and myth: Different words have been used to describe this epic. We approach the Ramayana^[1] through the eyes of an endocrinologist. We collate episodes related to endocrine function and dysfunction, providing a glimpse into the rich description of endocrine health provided in the ancient epic.

In many regards, the Ramayana's endocrine episodes reveal similarity with events chronicled in the later Indian epic, the Mahabharata.^[2] Vignettes of infertility, parthenogenesis, and infatuation adorn both books.^[3] We understand that there may be varied interpretations, both historical and scientific, of the events narrated here. Many of the characters do not form part of the actual Ramayana, but are included as they are related

to the Suryavanshi or Ikshvaku dynasty, to which Lord Rama belonged. With this caveat, we study various endocrine exemplars from a gland-based, rather than a chronological, viewpoint.

NEUROENDOCRINOLOGY

Hypothalamus

Kumbhakarna, the younger brother of Ravana, has been analyzed by earlier experts to have sleep apnea or hypothalamic obesity. We concur with the opinion of Lakhani *et al.* published in an earlier issue of the Indian Journal of Endocrinology and Metabolism,^[4] who feel that hypothalamic obesity or Klein-Levin syndrome are more plausible explanations.

Acromegaly

The Rakshasa (demon) Viraatha, son of Jaya, is described as a giant who was immune to arrows, but could experience pain. Various endocrine and nonendocrine differentials can be proposed to explain these clinical features. Could this be acromegaly with a sensory neuropathy? or type 2 diabetes with small fiber neuropathy?

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Another incident of neuropathic dysfunction is mentioned in relation to Sita, whose left eyelid, hand, and foot throbbed auspiciously in anticipation of Rama's arrival in Lanka. Metabolic neuropathy, perhaps explained by the prolonged malnutrition to which Sita would have subjected herself, might be a possible cause.

Precocious puberty

Precocious puberty is described in the case of Mandhata, son of Yuvanashwa. Mandhata was fed by milk from Lord Indra, and he experienced an accelerated growth due to this. Within 12 days, he looked like a 12-year-old boy with a height of 13 cubits.^[5]

Hypothyroidism

“Ugly, corpulent, paunchy, leering eyes blood-shot with lust, red hair all disheveled; voice hoarse”

The above record of Surpanakha, sister of Ravana, fits the clinical signs of hypothyroidism, specifically myxedema. Her increased libido, however, suggests other etiology such as testosterone-secreting tumors. Yet other differentials include syphilis and leprosy. Other possible endocrinopathies include Cushing's syndrome and metabolic syndrome.

GENDER-SPECIFIC ENDOCRINOLOGY

Hormones and women

The Ramayana include a wide variety of feminine characters. Anasuya, wife of Atri, who offered gifts to Sita in the forest, is praised as the “embodiment of pure womanhood.”

Endocrine temptation

The Ramayana describes attempts by the Gods to disturb Sage Vishwamitra during his meditation. The damsel Rambha, accompanied by the God of Love and the Spirit of Springtime, could not succeed in this attempt. However, Menaka, another apsara (fairy) achieved success after 10 years of trying. Manmatha, the God of Love, was not so lucky. He was burnt to ashes by the wrath of Shiva.

Such endocrine temptation also led to extramarital relations, as in the case of Ahalya (wife of Sage Gautama), who got involved with Indra. Indra disguised himself as Gautama, but even though Ahalya was not deceived, she fell in love with him. Her vanity and pride made her lose her judgment while her husband was away.

GYNECOLOGY

Infertility

King Dashrath is perhaps the first reported case of infertility in the world. Trying to achieve fertility, he conducted a

horse sacrifice, and for this he received God-sent porridge. This porridge was divided among his wives: Half was given to Kaushalya, the eldest wife, one-fourth to Sumitra, and one-eighth to Kaikeyi. The remaining one-eighth portion was given to Sumitra as well. These queens bore the princes Rama, Lakshmana, Shatrughan, and Bharata. It must be noted here that though Dashrath might have been the cause of subfertility (male factor), the treatment described was female-centric, and was the forerunner of induction of ovulation.

Sagar, the King of Ayodhya, was affected by infertility as well. His wives Kesini and Sumati received medication from Sage Bhrigu who asked them to choose between two types of drugs. Sumati opted to take an “ovulation inducer” which created 60000 capable sons. Unfortunately, all of them met an untimely death at the hands of Sage Kapila in patala (Hell). Kesini elected to have just one son, who turned out to be the cruel, lunatic murderer Asananjas. His son Amsuman continued the Sagar dynasty.

Janaka, King of Mithila, tried a different mode of treatment. Unable to beget children, he and his wife received their daughter Sita as a gift from mother Earth. This was probably an example of adoption, or surrogate motherhood, practiced with utmost confidentiality.

OBSTETRICS

Parthenogenesis

One of the major heroes of the Ramayana is Hanuman, who is also known as Vayuputra and Anjaneya. Hanuman is born of parthenogenesis to the fair maiden Anjana, whose virginity remains intact after her contact with Vayu, the God of Wind.

Twin delivery

Luv and Kush are reported to be nonidentical twins: Kush, the elder, had a wheatish complexion like Sita, while Luv had a bluish complexion, similar to that of Rama. Valmiki writes that both were born at the same time. Others suggest that Kush was a clone of Luv, created from dry grass (Kusha in Sanskrit), by the Sage Valmiki, who thought that Luv had been carried off by demons in Sita's absence.^[6]

Delivery through the ear

Modern obstetrics understands the concepts of ectopic pregnancy and of per abdominal delivery. The Ramayana takes this concept to the extreme, recounting the “delivery” of river Ganga through the right ear of Rishi Jahna, who had drunk the river when she damaged his sacrifice platform. As she was born of Jahna, the Ganga is also known as Jahnavi.

Unsuccessful medical termination of pregnancy

According to the Brahma Purana, King Bahu was expelled to the jungle with his queens, where they found safety with Sage Aurva. His wife Yadavi conceived, but took poison in an attempt to terminate her pregnancy. This attempt was unsuccessful, and she delivered a boy Sagar, along with the poison. Sagar turned out to be one of the most successful Suryavanshi Kings. In the Valmiki Ramayana, King Asita became a sage and found safety with Rishi Chyavana (son of Bhrigu). Asita's wife Kalindi attempted an unsuccessful medical termination of pregnancy and gave birth to Sagar, together with the abortifacient.

ANDROLOGY

Narcissism

A poignant Ramayana episode describes the para-endocrine phenomenon of narcissism and its unfortunate effects. King Trishanku of the Solar dynasty was so much in love with his own body that he requested his own body to be maintained when he ascended to heaven after death. Angered by this, Vashishta's sons cursed him to be an ugly "chandaal." Finally, Trishanku became a star (the Southern Cross), thanks to a sacrifice conducted by Vishwamitra, who was Vashishta's rival. Trishanku is a metaphor for someone who remains suspended between ground reality and his/her dreams, and achieves neither earth nor heaven.

Male pregnancy

Yuvanasva, son of King Prasenajit and his wife Gauri, was a King of the Ikshvaku dynasty. As he had infertility, the sages began a sacrifice to help him attain fatherhood. While Yuvanasva inadvertently drank consecrated water planned for his sacrifice, the sages announced that a son would be born to the queen who had consumed the holy water. After one century, Yuvanasva delivered a male child though a cut made by the Gods on the left side of the abdomen.^[7] The neonate was nursed by Lord Indra with divine milk which flowed from his fingers. This boy, named Mandhata, grew up to be a mighty monarch who conquered seven continents.

"From their rising to the going down of the sun, all that is irradiated by his light, is the land of Mandhata." - Vishnu Purana This description of male pregnancy is similar to events described elsewhere in the ancient Hindu texts, such as that of Samba in the Mahabharata. The story of Yuvanasva forms the plot of the book, *The Pregnant King*, written by Dr. Devdutt Pattanaik.^[8]

Sexual dysfunction

"Indra, may your manhood fall away from you"

This curse was given by the cuckolded Gautama to Indra, who turned into a eunuch. The Ramayana thus adds sexual dysfunction and medical castration or perhaps bobbitization to the spectrum of endocrinopathies that it describes. Mercifully for Indra, the curse was self-limiting, implying that medical, rather than surgical, castration was the chosen method of intervention.

Hormone replacement therapy

The Rig Ved depicts Rishi Chyavana, son of Bhrigu, as an elderly, feeble person.^[9] He consumed a special herbal paste known as chyawanprash, prepared for him at his ashram on Dhosi Hill (Haryana) by the Rajya Vaid or Ashwin brothers. The chyawanprash restored his youth and vitality, and may have been the first recorded hormone replacement therapy. Chyawanprash is a ghee-based mix of sugar, honey, gooseberry (amla), sesame oil, berries, and spices such as cinnamon, sandalwood, and cardamom. The calorie-dense nutraceutical is rich in Vitamin C.^[10]

METABOLISM

Calorie restriction

Feasting and fasting have been an integral part of Indian life since eternity. While the benefits of calorie restriction and calorie restriction mimicry are gradually being uncovered by modern medicine,^[11] long-term fasts are frequently mentioned in the Ramayana. One example of a monarch practicing regular calorie restriction is Bhagirathi of Ayodhya, who used to observe an absolute fast once a month.

Periodic paralysis

The Battle of Lanka lists two occasions when Rama and Lakshmana become paralyzed. The first episode is reported as being self-limiting, when the Naga weapons (serpents) flee upon the approach of Garuda, the bird. The second time, however, Hanuman has to bring Sanjeevani, the Hill of Herbs, to counteract the Brahmastra.

Is it possible that the author is describing a periodic paralysis? Or is it possible that these are symptoms of heat exhaustion? Was the second episode a more severe variant, which required pharmacological intervention?

MISCELLANEOUS

Broken heart syndrome

Apart from broken bones, the epic also lists a broken heart. This quote of King Dashrath describes the broken heart syndrome, which modern cardiology knows as Takotsubo cardiomyopathy or stress-induced cardiomyopathy.

“Without water, without sunlight, I may live for a while, but never without Rama”

Dashrath died in his sleep after his son Rama was sent into exile.

Osteoporosis

The Ramayana mentions the hunchback phenotype of Manthara, the companion and confidante of queen Kaikeyi. This hunchback may be the first description of osteoporosis, specifically of thoracic spinal fracture in world literature.^[12]

The Tamil poet Kamban praises Sita as having a “swan gait” and Surpanakha as possessing a “peacock gait”. Whether these are similar to the wadding gait we notice in osteomalacia is a matter of conjecture.

Diabetes

We were unable to find any mention of the diabetes phenotype in the Ramayana. We do, however, note mention of the vulture King, Sampati, who had lost his wings (limbs), could not move, was ever hungry for meals, and barely alive. These symptoms suggest an insulinopenic diabetes with diabetic amyotrophy. In this episode, Sampati gets back his wings and shines with fresh beauty after he helps Lord Rama by describing Lanka and Sita to the search party organized by Sugriva, the monkey King. Could this be due to insulin replacement? Or perhaps some other form of hormone replacement therapy?

SUMMARY

This brief communication has attempted to collect the details of characters and events noted in the Ramayana, and view them from an endocrine angle. The aim is to encourage

such literary forensics in the field of endocrinology, giving due weightage to the age-old classic knowledge of India. We admit that there may be many errors of omission and commission in this collation. We hope that these will be corrected by readers in future publications.

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