Consumption of “Stressed milk” resulting in “Stressful child”

Satish Kumar NS¹, Aswini dutt R¹ and Jagadish Rao PP²

¹Department of Physiology, Yenepoya Medical College, Mangalore, Karnataka, India
²Department of Forensic Medicine and Toxicology, Kasturba Medical College, Mangalore, Karnataka, India

Corresponding author:
Dr NS Satish Kumar, Assistant Professor, Department of Physiology, Yenepoya Medical College, Deralakatte, Nithyanandanagar Post, Mangalore- 575018, Karnataka, India.
Phone: +91 9035463383, +91 944808353
Fax: +91 8242204667
Email: neriyana.s@rediff.com

Received: 12 Jan 2011
Accepted: 04 Feb 2011
Published: 26 Feb 2011
Iran J Med Hypotheses Ideas, 2011, 5:2


Abstract

Various factors lead to stress in human beings which have a physical component and psychological component. These factors can be from the environment or from within the body. We propose a hypothesis that there is a third element where the stress factors can be transmitted from stressed lactating mother to their babies through breast milk. The babies thus exposed to high levels of stress hormones viz., cortisol display symptoms of stress. Chronic exposure to such abnormal levels of cortisol also lead to defective brain growth and the whole body overreacts to normal levels of stress hormones later in their life.

Keywords

Breast feeding, Cortisol, Infant, Development

Introduction

Stress is the consequence of the failure of human being to respond to emotional and physical threats. Stress is seen in all age groups right from infant to an elderly individual. The autonomic nervous system provides the rapid response to stress commonly known as the fight-or-flight response, which involves the sympathetic nervous system and withdrawing the parasympathetic nervous system. Thereby enacting physiological changes in cardiovascular, respiratory, gastrointestinal, renal, and endocrine systems. Stress results in release of adrenocorticotropic hormone (ACTH) from the pituitary into the bloodstream, which results in secretion of cortisol and other glucocorticoids from the adrenal cortex. Steroids are involved in the organism’s response to stress and the response is finally terminated via feedback mechanism (1). Advantages of breastfeeding include providing nutrition, psychological benefits of maternal-infant bonding, improved gastrointestinal outcomes, reduced risk of allergic conditions, increased immunity and fewer systemic infections and improved psychomotor development (2).
The Hypothesis

Even though breastfeeding continues to offer health benefits during infancy and early childhood, we propose a hypothesis, that a lactating mother who is in stress of various forms like emotional, social and postpartum can transmit the stress factor in the form of excess cortisol hormone through breast milk and affect the child’s development.

Evaluation of Hypothesis

Breast milk contains proteins, carbohydrates, fats, vitamins, minerals and antibodies. Up to 6% of the human milk fat contains vaccenic acid and conjugated linoleic acid (3) which contributes for synthesis of cortisol. Infants, who are exposed to maternal stress (4) and poor family attachment (5), are prone for improper maturation of Hypothalamo-Pituitary Adrenal axis (HPA). While many hormones control stress reactions, some having multiple roles, cortisol is probably the most typical of the stress hormones which is produced in stressed lactating mother. During stress, stress hormones are released under control of the HPA axis to help the body to cope up with the stressful situation. This cortisol gets transmitted from mother to the baby in excess of required quantity necessary for normal child’s development. In such a situation, the symptoms in the child can be excessive cry, refusing the feeds, disturbed sleep, frequent changing of the nappies.

Discussion

Repeated exposure to "negative" stress causes chronic elevations of cortisol in lactating mothers. Chronically elevated cortisol is transmitted from stressed lactating mother to the infants through the breast milk. Infants regularly exposed to stress also demonstrate higher cortisol releases and more sustained elevations of cortisol in response to stressful situations (6). The hormonal and functional adjustments that go along with it are shown to be associated with permanent brain changes in infancy that lead to elevated responses to stress throughout life. A brain developed in a stressful environment overreacts to stressful events and controls stress hormones poorly throughout the life. Levels of cortisol and other stress hormones are regularly elevated in these individuals (7). Elevated Cortisol levels can dampen the immune system, defective ossification, damage to hippocampus which can lead to impaired learning in later ages.

Conclusion

Although breast feeding provides the infant with all required nutritive and non-nutritive benefits, nursing mothers and family members should realise that Consumption of “Stressed milk” would result in “Stressful child”. This hypothesis requires clinical correlation involving the estimation of Cortisol levels (figure 1), assessment of infant’s behavioural, developmental and neurological changes.

Acknowledgements

Dr. Shankar Bhat. K, Professor and Head of the Department of Physiology, Yenepoya Medical College, Mangalore, Karnataka, India.

Conflict of Interest

No Conflict of Interest to be declared.
Figure 1: Evaluation of the hypothesis can be done at the green arrow shown in this figure.
References