

Study of Variation in Linear Growth and Other Parameters of Male Albino Rats on Exposure to Chronic Multiple Stress after Birth

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Abstract : Introduction: Stress is a nonspecific response of the body to a stressor or triggering stimulus. Chronic stress exposure contributes to various remarkable alterations of growth and development. Collective effects of stressors lead to several changes which are physical, physiological and behavioral in nature. Objective: To understand on an animal model how various chronic stress affect the somatic body growth as it can be useful for effective stress treatment and prevention of stress related illnesses. Material and Method: By selective fostering only male pup colonies were made and 102 male albino rats were studied. They were divided into two groups as Control and Stressed. The experimental groups were exposed to four major types of stress as maternal deprivation, Restraint stress, electric foot shock and noise stress for affecting emotional, physical and physiological activities. Exposure was from birth to 17 week of life. Roentgenographs were taken in two planes as Dorso-ventral and Lateral and then measured for each rat. Various parameters were observed at specific intervals. Parameters recorded were Body weight and for linear growth it was summation of Cranial length, Head rump length and tail length. Behavior changes were also observed. Result: Multiple chronic stresses resulted in loss of approx. 25% of mean body weight. Maximal difference was found on 119th day (i.e. 87.81 gm) between the control and stressed group. Linear growth showed retardation which was found to be significant in stressed group on statistical analysis. Cranial Length and Head-rump Length showed maximum difference after maternal deprivation stress. After maternal deprivation (Day 21) and electric foot shock (Day 101) maximum difference i.e. 0.39 cm and 0.47 cm were found in cranial length of two groups. Electric foot shock had considerable impact on tail length. Noise Stress affected moreover behavior as compared to physical growth. Conclusion: Collective study showed that chronic stress not only resulted in reduced body weight in albino rats but also total linear size of rat thus affecting whole growth and development.

Keywords : stress, microscopic anatomy, macroscopic anatomy, chronic multiple stress, birth

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