Effect Of Melatonin In A Rat Model Of Allergic Lung Inflammation

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Abstract:

Aims: Asthma is an inflammatory lung disease characterized by bronchoconstriction and hyper responsiveness. Immuno stimulatory effects of melatonin have been reported. In this study, we investigated the impact of melatonin administration on allergic airway inflammation in a rat model. Methods: Forty five adult Wistar albino rats were equally divided into three groups: group I served as control; group II: rats sensitized to ovalbumin and challenged intranasally with ovalbumin to induce an allergic inflammatory response and group III, rats were sensitized and treated with intraperitoneally melatonin. The serum levels of IgE, IgG1 and ova-specific IgG were measured by ELISA. In the bronchoalveolar lavage fluid (BALF), the levels of IL-4, IL-5, IL-13, 1L-10 were measured. IL-10 expression was measured by real time polymerase chain reaction. Histopathological examination of the lung tissues using H&E stain were done. Results: Melatonin administration inhibited allergen-induced lung eosinophilic infiltration and improved the pathological lesions of the lungs. It significantly decreased total serum IgE, IgG1 and OVA-specific IgG1 along with BALF levels of IL-4, IL-5, IL-13. Melatonin increased BALF levels of IL-10 and its mRNA expression. Conclusion: Melatonin administration exhibited a significant reduction in all the markers of allergic inflammation. The data suggests that inhibition of T-cell response and up regulation of IL-10 may be responsible for immunomodulatory effect of melatonin in the rat model of allergic airway inflammation.

Keywords:

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