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Respiratory Functions and Complaints, Sensitivity to the Indoor Allergens in Barn Workers

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Objectives: Studies on barn workers indicate that respiratory symptoms increase as the working time increases. The barn environment includes microorganisms, allergens, endotoxins, animal feed powders and volatile chemical agent. The aim of this study is to investigate the relationship between breathing symptoms, functions and allergic conditions in the barn.

Methods: A total of 78 barn underwent respiratory complaints questionnaire, pulmonary function tests, skin prick tests including aspergillus, cow's epithelium, storage mite, chest radiography. The control group consisted of 39 individuals with similar age.

Results: Average working time of the barn workers was 25.6 years, the number of animals was 14.7, and the distance of the houses to the barn was 28.4 meters. The proportion of workers who perform all the tasks including milking, sweeping the places, feeding and taking out the fertilizer was 91.1%. The rate of cough (36%, 13%, $p=0.007$) was significantly higher in the barn workers. Although sputum (22% to 18%, $p=0.410$) and wheezing (13% to 5%, $p=0.167$) were seen much, it did not reach statistical significance. Although the rates of reporting the hay fever (16.7% to 10.3%, $p=0.263$), asthma (14.1% to 5.1%, $p=0.124$) and chronic bronchitis (7.7% to 5.1%, $p=0.465$) diagnosis in barn workers were higher than those of the control group, no significant statistical differences were found. Looking at the skin prick test results; of the barn workers, 7 (8.9%) had cow's epithelium, 8 had storage mites (10.1%), 3 (3.8%) had positive response to aspergillus, while only 3 (7.7%) had positive response to storage mites in control group. The rate of negative skin test was 75.9% in barn workers and 92.3% in control group ($p=0.171$). There was no significant difference between the barn workers and the control group's expected pulmonary function parameters. The mean values of FEV1/FVC (81.9% to 77.7%) and MMEF (94.6% to 77.6%) were significantly higher in the barn workers with a working duration 15 years or below than those with working time 30 years and above ($p=0.029$, $p=0.017$ for MMEF).

Conclusion: Sensitivity to cow's epithelium, storage mites and aspergillus antigens were detected among barn workers. It was observed that respiratory obstructive deterioration increased as the duration of working in the barn increased. It was emphasized that necessary measures should be taken to improve the indoor air in the barns and to protect the employees.

Keywords: Allergen, barn, respiratory functions