



ORIGINAL ARTICLE

Hematological Complications in Rice mill workers of district Allahabad, Uttar Pradesh

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ABSTRACT

A cross sectional study was carried out to evaluate the effect of rice husk dust in rice millers in Allahabad. Altogether 150 workers participated in this study. They were interviewed using standardized questionnaires and lung function tests were performed. This research is to study a structure of local rice mills which causes dust particles during the milling process. In this study a group of 50 healthy workers and another group of (100exposed) labours working in rice mill Industry were randomly selected with ages ranging from 20-35, 35-50, 50-65 years. India is a second largest rice growing countries in the world after china. The findings of this study recognized the role of rice husk dust for a longer duration in decline of haematological parameters as per tests conducted among rice mills workers.

Key words: Rice mill, Hemoglobin parameters

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INTRODUCTION

India is the second biggest rice producing country in the world after china. It contributes about 20 percent of the world output of rice. It is grown in almost all the provinces of the country but more than 86 percent of the total production accounts for the states of Andhra Pradesh, West Bengal, Tamil Nadu, Uttar Pradesh, Bihar, Orissa, Madhya Pradesh, Punjab and Assam. Rice production, processing and marketing constitute the biggest industry in the country. Indian rice milling industry is the oldest and largest agro-based industry. The cultivation of rice (*oryza sp*) is usually carried out in irrigated "padi"(fields). After harvesting, the rice is dried and milled and a large amount of dust is thereby generated. Rice cultivation is done in the irrigated fields. The crop is harvested, dried and milled. A large amount of dust is generated, especially during the milling activities. Rice mill workers are potentially exposed to organic and inorganic dusts and synthetic chemicals that may have adverse effects on hematological parameters. Several reports have suggested that unprotected dust exposure in agricultural settings may lead to hematological disorders.

MATERIALS AND METHODS

The study population consisted of all workers employed at the time of the study in the rice mill in the rice growing area of Allahabad District. A set of 150 workers (50 samples normal, 100 samples exposed) rice mill industry were studied regarding collection of Blood sample from the different age group of workers (20-35, 35-50, and 50-65). The questionnaire were pertaining to the hematological disorder, past medical history, smoking, occupational history and eye irritation. A full physical examination was also carried out on each subject and control by another physician who was not aware of the dust exposure level. Blood samples were also collected in vial EDTA tubes and analyzed it in MS9 fully automatic analyzer.

RESULT

150 workers with (20-35, 35-50, and 50-65) age of 40 years were assessed. Mean duration of employment was 12 year. A significantly greater proportion of rice millers was found to have conjunctivitis, pterygium, eosinophilia, leucosytosis.

The detail results are shown in Table -1 where red blood cell parameters were decreased. Haemoglobin, T-RBC, MCV, MCH and MCHC decreased 33.91 %, 64.03%, 5.83%, 21.90% and 29.55 % respectively as compared to controls. Significant leukocytosis of 116.84 % was observed.

Table-1: Hematological Complications in Rice Mill Workers of District Allahabad, Uttar Pradesh.

Sr. No.	Parameters	Control	Treated
1	Hemoglobin(gm/dl)	13.21±0.81	8.73±0.7
2	T-RBC (x10⁶/mm³)	4.81±0.15	1.73±0.21
3	TLC(x10³/mm³)	6.83±0.52	14.81±0.75
4	Polymorph(%)	59±2.0	47±2.0
5	Lymphocyte(%)	26±3.0	36±2.0
6	Monocyte(%)	6±1.0	5±1.0
7	Eosinophil(%)	6±1.0	8.0±1.0
8	Basophil(%)	1±1.0	1±1.0
9	MCV (micron³)	103±2.0	97±3.0
10	MCH(pg/ml)	8.72±0.77	6.81±0.74
11	MCHC(g%)	22.71±0.83	16±0.71
12	Platelets(x10³/mm³)	307±22.0	237.0±24.0

DISCUSSION

Present study have shown significant association of various clinical signs and symptoms and hematological changes with occupational exposure to rice husk dust . The hematological disorders suggest that the harmful effects may be link to both non specific irritation and allergic responses to rice husk dust .The rice husk is shown to be covered with small needlelike hairs that project outward as sharp , elongated spines . these spikes are about 200 -300u in length and about 30-40u in diameter at the base, tapering into sharp ends. The structure of these spikes suggest that they may be responsible for the harmful effects of the rice husk dust exposure .From this study , it seems that there is an impairment of the hematological parameters for the rice millers and it indicate further extensive epidemiological and pathological studies for the health and safety of the rice mill workers.

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