www.jmscr.igmpublication.org Impact Factor 3.79
ISSN (e)-2347-176x

IGM Publication Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Comparative Study of the Absolute Eosinophil Count between Jeans Washermen and Normal Individuals in Bellary

Authors
Dr Arun Kumar S*, Dr Govindaraj J, Dr Noorjehan Begum, Dr Mohammed Jaffer
Dept. of Physiology, VIMS, Bellary, Karnataka
Email: *govindaraju_9999@yahoo.com*

ABSTRACT

Background: *Allergic reactions occur normally to various substances present in nature as well as to man-made chemicals. These reactions sometime restricted to skin only and sometimes may involve multiple organs like lungs, kidneys etc. These reactions are due to formation of antibodies in the blood. This antigen- antibody combination is responsible for injury inflicted to the body. In the present study an attempt is made to study the variations of absolute eosinophil count (AEC) in the jeans washer men & normal healthy male individuals of Bellary.*

Aims *1. To assess the absolute eosinophil count in jeans washer men and compare with that of healthy age matched individuals.*

2. To find out the effect of duration of exposure to chemicals on in jeans washer men.

Methods - Study Design: *cross sectional case control study*

In the present study, 50 male workers from Jeans washing factories worked for more than 5yrs & 50 healthy security male workers from VIMS, Bellary were randomly selected. Ethical clearance & written informed consent were taken. All the subjects were subjected to 1ml blood sample tests for AEC by Dunger's method. The data collected was tabulated and subjected to statistical analysis using SPSS software. (Standard deviation, mean and unpaired student T test)

Results: *The means of AEC were significantly high in cases compared to controls. With increased duration of exposure to chemicals there was a significant increases in AEC.*

Conclusion: *As compared to controls increase in AEC in cases indicated that jeans washermen were allergic to industrial chemicals*

Keywords: *AEC, Durationof exposure.*

INTRODUCTION

Blue jeans are big business, and in recent years fashion designers have created new demand for denim which comes with a pre-worn look. Bellary, popularly known as Jean capital of India. Bellary is the second important centre for manufacture of ready-made garments in Karnataka. History of garment industry in Bellary dates back to First World War period. After the withdrawal of troops, they started manufacturing uniforms to the school children, which was once famous for its perfection all over the country. With the change in fashion and dress culture of men in India, they started manufacturing trousers for men mainly Jeans during early 70's.The industry took the noticeable growth only during last two decades.

Allergic reactions occur normally to various substances present in nature as well as to man-made chemicals.These reactions sometime restricted to skin only and sometimes may involve multiple organs like lungs,kidneys etc. These reactions are due to formation of antibodies in the blood. This antigen- antibody combination is responsible for injury inflicted to the body. In the present study an attempt is made to study the variations of absolute eosinophil count (AEC) in the jeans washer men & normal healthy male individuals of Bellary.

MATERIALS AND METHODS

1. Materials

A. Selection of subjects:

The sample population for the above study was selected from both the rural and urban population of Bellary. Total sample size 100

Two study groups were selected from the above sample population who provided informed written consent were interviewed and a clinical history was taken, using a structured questionnaire to conduct the various examinations. Each group had a sample size of fifty subjects who were selected using simple random sampling.

Group 1 is the case group consisting of fifty jeans washermen who were exposed to dust, chemicals and fumes during working hours in jeans factory for more than 5 years in the age groups between 25-45 years with minimal allergic symptoms of occupational disease. The work is of three 8-hour shifts/day for seven days/week.

Group 2 is the control group. For this group fifty healthy male volunteers were selected from the study population other than jeans workers, not exposed to the dust,chemicals and gases in their lifetime, who were working in VIMS campus, Bellary, as security guards. All the subjects were subjected to 1ml anticoagulated blood sample tests for AEC by Dunger's method. The data collected was tabulated and subjected to statistical analysis using SPSS version.21 software. (Standard deviation, mean and unpaired student T test)

Study design: cross sectional case control study

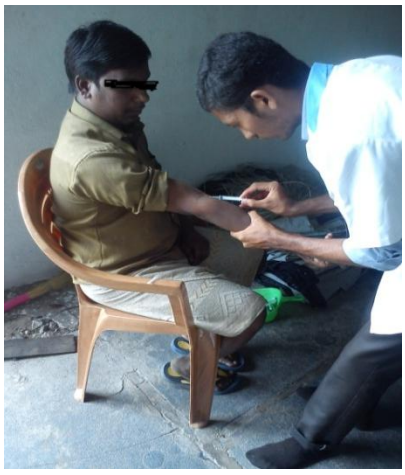
Exclusion criteria:

- Persons with history of respiratory disease.
- Persons with history of cardiac disease.
- Persons with history of neurological diseases.
- Persons with abuse of psychoactive substances.

- Persons with habits of smoking.
- Persons who are having history of allergy to other than chemicals used in Jeans factories.
- Persons with family history and personal history of psychiatric disease.
- Persons who has not given consent.

B. The Instrument:

1. Examination proforma used for recording history and clinical examination findings was designed and validated to collect data on smoking habits, socioeconomic status, past history of allergic diseases, education, job exposure matrix, and other parameters.
2. Portable weighing machine (Samso personal weighing scale of capacity 150 Kg)- to record the body weight in kilograms
3. Mercury sphygmomanometer (Diamond deluxe) for recording the blood pressure
4. Stethoscope (Revival) to auscultate the heart and respiratory sounds.
5. 2ml disposable syringes
6. 5ml vacutainer tubes



2. Methods:

Ethical clearance was taken from the VIMS, Institution before conducting this study.

A detailed history was obtained and recorded from the case and control group in a prescribed pretested and semi-structured proforma on socio-economic and demographic variables. The tests were carried out on the subjects (study & control) in a relaxed state and privacy was given utmost importance.

1. Record of physical anthropometry of subjects

1. Height (in cms) of the subjects was measured in standing and erect posture.
2. Weight (in Kgs) was recorded using standard weighing machine both for study and control group in standing posture.
3. BMI was calculated using the Quetelet index, is a measure of relative weight based on an individual's mass and height. IOTF-proposed classification of BMI categories for Asia was applied to the cases.
4. BSA was calculated using the DuBois and DuBois formula.

2. Record of physiological parameters of subjects

1. Pulse rate: It was expressed as beats per minute. Right radial pulse was examined by compressing radial artery in the semi pronated forearm and slightly flexed wrist of the subject.
2. Respiratory rate: It was recorded by inspection and palpation of chest and abdomen and was expressed as cycles per minute

3. Blood pressure: It was measured by mercury sphygmomanometer in mm of Hg by palpatory and auscultatory methods.
4. **Technique of blood sample collection**

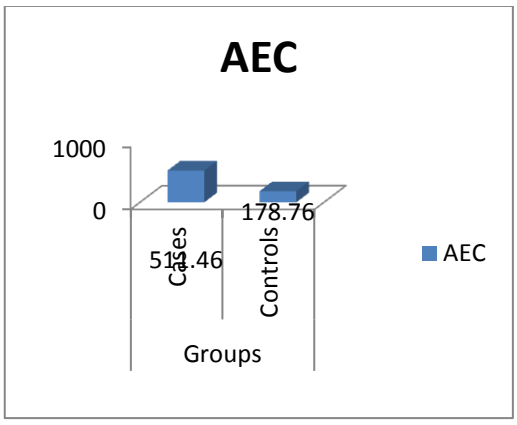
Under strict aseptic precautions 1ml of venous blood is taken from anticubital vein of arm. Blood is collected in the anticoagulant content vacutainer tubes. AEC is done using Dunger's fluid in the research laboratory of physiology department, VIMS, Bellary.

RESULTS

Age, height, weight, BMI & BSA were significantly matched between cases and controls. Physiological parameters like pulse, respiratory rate, systolic and diastolic blood pressure were significantly matched between cases and controls. Means of AEC were high in cases compared to controls as shown in table 1

Table-1: Comparison of AEC

Parameter	Groups		P value
	Cases (Mean±SD)	Controls (Mean±SD)	
AEC	511.46±153.5	178.76±12.7	<0.05 (HS)



Graph 1: Comparision of AEC between cases and controls

DISCUSSION

The means of AEC were significantly high in cases compared to controls indicating that the jeans washermen developed hypersensitivity reactions to the chemicals used in the factories like potassium permanganate, acid (HCl), etc over a period of 5 to 8 years.

CONCLUSION

As compared to controls increase in AEC in cases indicated that jeans washermen were allergic to industrial chemicals. So it is recommended that the periodic assessment of the AEC of jeans washermen should be done regularly and further investigations like skin allergy tests should be done in these workers.

RECOMMENDATIONS

1. Periodic medical check ups
2. Preventive measures like wearing mask, helmets, eye glasses, hand gloves and leather boots which the factory is providing should not be neglected by the workers.
3. Health education to maintain the proper hygiene of the workers & having a balanced diet with plenty of fluids.

REFRENCES

1. Dominique Muller of Clean Clothes Campaign. Breathless for blue jeans: Health hazards in china's denim factories. June 2013. Available at http://www.cleanclothes.at/media/common/uploads/download/breathless

-for-blue-jeans-health-hazards-in-china-s-denim-factories/Report_Breathless_130703.pdf

2. D:\Databank Ashok\Tamal Databank\Bellary\ Diagnostic Study-2.doc. Diagnostic Study Jean Manufacturing Clusster, Bellary. Available at http://www.cluster collaboration. eu/documents/270930/0/Diagnostic+Study+Report+of+Jeans+Manufacturing+Cluster+of+Bellary.pdf
3. Korn RJ, Dockery DW, Speizer FE, et al. Occupational exposures and chronic respiratory symptoms: a population based study. Am Rev Respir Dis 1987, 136:298-304.
4. Akgun M, Turkyilmaz A, Erdogan F, et al. Silicosis caused by sandblasting of jeans in turkey: A report of two concomitant cases. J Occup Health 2005; 47:346-349.
5. International Labour Organization, WHO. Deadly Denim. 19th September 2012
6. Ozmen A C, Nazaroglu H, Yildiz T, et al. MDCT findings of denim sandblasting induced silicosis- a cross sectional study. Environ Health.2010;9:17