OCCUPATIONAL ASTHMA FROM MADRAS: SOUTH INDIA

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48 cases of asthma of occupational origin were studied from industrial workers of Madras City over a period of two years. They were all from Ambathur Industry, Guindy Industrial Estate and Manali Chemical Industries. The maximum age group was 20–29 years (52%). Cotton dust, flower mills and chemicals formed 62%, 30% and 8% respectively. Lung function tests showed obstructive type of ventilatory defects. Prevention and drug therapy are discussed.

INTRODUCTION

Asthma of occupational origin is of importance, *medically* because new techniques have resulted in increased knowledge of physiopathological mechanisms involved, *occupationally* because of introduction of new chemicals.

Asthma is defined as a reversible reduction in the diameter of the bronchi which by muscular contraction hinders the passage of air. Occupational asthma is brought about by a single or repeated exposure to an active substance present in the working environment.

MATERIALS AND METHODS

About 70 doctors refer to the cases of asthma for investigation and treatment from E.S.I. Dispensaries, Madras. Cases were admitted and detailed history and clinical examinations were done—Atopy type of job, work environment and treatment already had. Blood count investigations, blood and sputum eosinophilia, chest X-ray and lung function tests were done. Intradermal skin tests were also done in the majority of the cases. Treatment with bronchodilators—oral, parenteral, aerosols were given. Desensitization of the allergen was also done. Of the total hospital admission cases, 10% were asthmatic; 10% were occupational.

Table I

Age	Male	Female	Total	%
20–29	10	15	25	52%
30–39	15	2	17	27%
40–49	6	—	6	13%
	31	17	48	

Of the 48 cases 52% were in the age group of 20–29 years, 27% were in the age of 30–39 years.

Occupations involved are tabled as:

Table II

	No.	Percentage
Cotton Dust	30	62%
Flower Mills	14	30%
Chemicals (Isocyanates)	4	8%

62% were working in cotton mills and export cotton industries.

Table III

Symptoms	No.	Percentage
Dyspnea	40	83%
Cough	18	100%
Wheezing	48	100%

Table IV

INVESTIGATION: Showed Blood and Sputum Eosinophilia

—Leukocytosis	24	50%
—Blood—Eosinophilia	48	100%
—Sputum Eosinophilia	48	100%
—Chest X-rays		
Over inflated	40	83%
Pneumothorax	2	4%
Normal	6	13%

Lung function tests were done because chest X-ray findings were not specific of asthma, and to assess the severity of respiratory impairments. It was observed that the obstructive type of ventilatory defects were due to narrowing of lung airways. The FEV_1/FVC ratio expresses the slowed expiration. Normal is 75%. Its reduction in airflow obstruction percentage results of lung function tests in cotton, flower mills and chemicals are shown in tables before and 10 minutes after solbutanol inhalation.

Table V

LFT	Cotton		Flower Mill		ChemicaL	
	B	A	B	A	B	A
FVC	1.2	1.25	1.65	1.75	2.10	2.5
FEV_1	0.67	0.67	0.90	0.90	1.65	1.75
FEV_1/FVC	57%	57	49%	59%	72	73
PER	2.2	3.3	2.3	3.4	2.4	3.6
FMEFR	0.4	0.5	0.4	0.4	0.8	0.4

Lung function tests which were done before and after exposure showed decrement of 20% predicted values in all the cases.

Treatment

Elimination of the causative agents from the environments is most ideal. Desensitization with cotton dust, flower mill dust is under trial. Routine bronchodilators with tablets, injections or aerosols, steroids and chromolynsodium are also being tried.

Occupational asthma is really a problem in our industrial country. Identifying the allergen in the working environment, removal of the causative agent and better healthier conditions of the industrial worker will augment the industrial output and the country will certainly prosper.

MANAGEMENT OF ASTHMA

Occupational asthma can be prevented by reduction of air-dusts in the workplaces by exhaust ventilation and hoods or enclosures. Reallocation to different works, though advised, is difficult because of the special training and the job skills they require. In the manufacturing process proteolytic enzymes may be added to change the allergen. Encapsulation into inert compounds and substitution for chemical powders by paste or solutions can be the ideal way of preventing occupational asthma.

Drugs used only for symptomatic relief of the attacks are:

1. Sympathomimatic (adrenergic) Epinephrine .5 ml. of 1:1000 by subcutaneously Ephedrine—50 mg. Orciprenaline sulphate—tab.10 mg. t.d.s. .5ml I.M. or I.V. drops.

2. Beta—adrenergic drugs—advantage it orally gives; sustained action, sympathomimatic side—effects are absent. Hence replaced sympathomimatic drugs. SALBUTAMOL —4 mg. tab. twice daily. Terbetaline sulphate 2.5 mg. tab.

3. Xanthenis are widely used: effective

Amino Phylline	.25 gm.	10 ml. I.V. twice daily
Theophylline	50 mg.	½ I.M. or I.V. twice daily
Etophyline	150 mg.	½

4. Anticholinergic—Atropine sulphate given orally or in drip—Not used because of drying up of mucous secretion and further aggrevating bronchospasm.

5. Mast-cell Stabilizers—CROMOLYN SODIUM can be given for prophylaxis.

6. Corticosterods—oral prednisolone 30–60 mg. t.d.s. betamethazone .5 mg tab.

   4 mg/ml.—I.V. drip; Dexametha Zone 4 mg/ml. can be given; found to be less effective compared with Betamethazone studies; not effective for immediate reactions.

7. Inhalation—AEROSOL.

   Adrenaline by nebulizers or intermittent positive Breathing device (IPBD) inhalation.

   —SALBUTAMOL—100 mcg/per metered dose.
   —TERBETALINE—0.25 mg/per metered dose.
   —BETAMETHAZONE—50 mgg/inhalation
   —CROMOLYN SODIUM—inhalation.

8. ANTIBIOTICS, OPIATES, SEDATIVES, TRANQUILIZERS, EXPECTORANTS MUCOLYTIC AGENTS, I.V. FLUIDS can be used if needed.

9. Desensitization for the specific allergen can also be tried.

STATUS ASTHMATICUS: can be due to respiratory infections, respiratory depressants of early withdrawal of stands. Blood gas analysis, PH may help in addition to chest X-ray—Oxygen inhalations, adequate hydration, expectorants, antibiotics and physiotherapy will help these patients remarkably.

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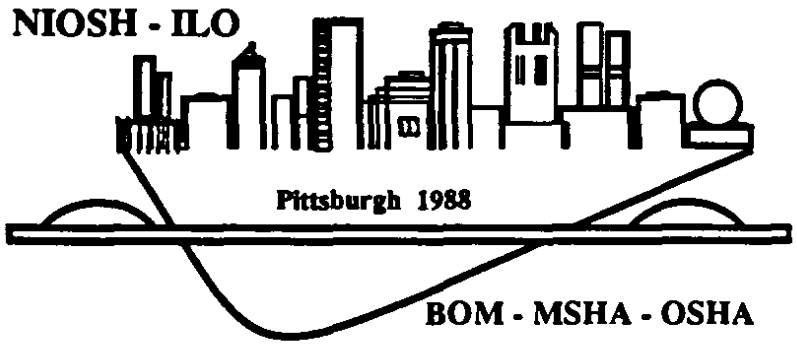

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