RADIOLOGICAL CHANGES IN BRONCHIAL ASTHMA

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SUMMARY

This study was proposed to identify specific radiological appearances in Malaysian patients with bronchial asthma. All consecutive patients, seen in the Medical Unit, Universiti Kebangsaan Malaysia between 1976 and 1979, satisfying the American Thoracic Society [1962] criteria for bronchial asthma formed the subjects of this study. Analysis of 207 patients led to the following conclusion. There are specific radiological changes present in a proportion of bronchial asthmatics during the acute episode. These changes are more frequent in the younger age group and in those in which the age of onset are early. The duration of asthma seems to have some bearing to the radiological changes.

INTRODUCTION

Radiological examinations of the chest in bronchial asthma may demonstrate abnormalities and complications. It may exclude diseases causing airway obstruction which simulate bronchial asthma (Kerr, 1977). Regular radiological examination of chest is done to detect early stages of diseases involving the lungs. Normal radiological appearances of the chest and its normal variations have to appreciated to avoid erroneous conclusions.

The purpose of this study is to detect changes radiologically in patients with bronchial asthma seen in the Medical Unit, Universiti Kebangsaan Malaysia.

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PATIENTS AND METHODS

All consecutive patients seen in the Medical Unit of Universiti Kebangsaan Malaysia between 1976 and 1979 that fulfilled the criteria of The American Thoracic Society (1962) for bronchial asthma were included in the study. Readmissions were excluded from the study. No selection was made regarding age, sex or race. Each patient was seen on admission or in clinic. Radiological examinations of the chest were done within 24 hours. A full history, clinical examination, routine examination of blood urine and faeces were documented.

RESULTS AND DISCUSSION

We studied 207 patients, 112 males and 95 females. In 138 out of 207 patients (67%) radiological examinations of the chest were normal. The experiences of others (Simon *et al,* 1973, and Hodson *et al.,* (1974) were 73% and 69% respectively. Overinflation was detected in 41 patients (20%). Other authors' findings were (Simon *et al.,* 1973) 18% and 19% (Hodson *et al.,* 1974).

TABLE I

CHANGES IN RADIOLOGICAL EXAMINATIONS OF THE CHEST IN 207 CASES

Changes	Number of cases
Overinflation	41
Bullous Emphysema	3
Tubular (Tramline) shadows	17
Cor Pulmonale	3
Pneumothorax	1
Consolidation	3
Mediastinal Emphysema	1
Normal	138
Total	207

TABLE II

RADIOLOGICAL CHANGES BY AGE OF ONSET

Age of Onset	Number of Cases
0 - 14	39
15 - 29	18
30 and above	12
Total	69

TABLE III

RADIOLOGICAL CHANGES BY DURATION OF BRONCHIAL ASTHMA

Duration [years]	Number of Cases
0 - 14	20
15 - 29	24
30 and above	25
Total	69

TABLE IV

RADIOLOGICAL CHANGES BY AGE GROUP

Age Group [Years]	Number of Cases
0 - 14	18
15 - 29	31
30 - 44	12
45 and above	8
Total	69

Transient tubular ('tramline') shadows occurred in 27% of cases in Simon's (1973) experiences. We documented similar changes in 17 patients (8%).

Hodson *et al* (1974) concluded that chest abnormalities are related to the age of onset of asthma and not to its duration. We found similar relationship with regards to the age of onset (Table II); the earlier the onset the more likely it is for radiological changes to appear. In our study we detected changes in more patients whose durations of bronchial asthma are longer (Table III).

As in the experiences of Hodson *et al.*, (1974), changes in chest radiograph occurred more frequently in the younger age group (Table IV). McCarthy (1973) documented that bronchial asthma, due to pulmonary aspergillosis, presented radiographically as transient areas of consolidation, parrallel line or ring shadows and band shadows. In our experiences such shadows occurred in 20 patients. Positive skin tests to *Aspergillosis fumigatus* occurred in 16% (Cualim 1974) to 21% (Zulkifli and Chan 1979) of patients with bronchial asthma.

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REFERENCES

American Thoracic Society (1962). Definations and classifications of chronic bronchitis, asthma and pulmonary emphysema. *Am. Rev. Resp Dis.* **85**, 762-768.

Hodson, M.E. Simon, G. Batten, J.C. (1974). Radiology of Uncomplicated asthma. *Thorax,* **29**, 296-303.

Kerr, I.H. (1977). Asthma, Edited by Clarke, T.J.H and Godfrey, S. 1st. Edition. Charpan and Hall, London, 105-125.

McCarthy, D.S. Pepys. J. (1973). Cryptogenic pulmonary eosinophilias. *Clin. Allergy,* **3**, 399-351.

Simon, G. Connolly, Littlejohns, D.W. *et al* (1973). Radiological Abnormalities in children with asthma and their relation to clinical findings and some respiratory function tests. *Thorax,* **28**, 115-123.

Zulkifli, A. Chan, K.W. (1979). Experience with skin reactions to various allergens in bronchial asthma. *Med. J. Malaysia,* **34**, 153-155.