

Role of broad spectrum antibiotics in chest infections in infants.

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Abstract

50 patients with chest infections admitted in the Kanti Childrens Hospital were studied to assess the effectiveness of the broad spectrum antibiotics in altering the course of the disease. These infants were graded to assess the daily improvement in their conditions and were followed up to 7 days. Altogether 12 patients were grouped in grade 2 and 38 were grouped in grade 1. There was no change in the condition of these patients up to the fifth day of admission in spite of the costly drugs used.

These findings confirm that routine use of the antibiotics in chest infections in infants without secondary complications does not alter the prognosis. Moreover it increases the economic burden to family whose daily income can hardly afford nutritious diet.

Introduction

Chest infections are the most common diseases in infancy. Bronchiolitis is responsible for the majority of the cases. It is a disease of infancy caused by infection from respiratory syncytial virus. It is distinguished by an inflammatory reaction which is confined to the walls of the bronchioles and the alveolar walls. Plugging of

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the bronchioles with the exudates causes hyperinflation of the lungs. It mostly affects the infants between the ages of 2-6 months. It is in its worst during the midweek of the disease process and things like antibiotics, corticosteroids and bronchodilators do not alter the prognosis. On investigations the blood counts are within the normal range and the chest x-ray shows evidence of hyperinflation,

This study was initiated to assess the present practice of giving antibiotics parenterally to all the cases with chest infections in infancy,

Subjects and methods

50 patients with the history of recurrent chest infections were studied. Their ages ranged from one month to twelve months (mean age group 5 months) and all of them had suffered from the chest infections, 30 were male infants and 20 were females. All of these patients had chest infections up to the alveolar level which was clinically characterised by the presence of the fine crepitations, and wheezes. In all these patients a provisional diagnosis of bronchopneumonia was made by the admitting room, 12 these patients (6 female and 6 male, mean age group was 2 and 5 months respectively) had severe respiratory distress. None of these patients had pyrexia as noted on the chart during the admission and thereafter while staying in the hospital, all of these patients were on antibiotics namely Gentamycin and Ampicillin either singly or in combination with the bronchodilator and 9 patients had dexamethasone in the forms of drops or injections.

These patients were examined on the successive days while staying at the hospital. Routine examinations of blood (total and differential counts) and chest x-rays were done in all these patients.

In addition these patients were graded on the 1,3,5 and 7 days. The grading system was based in the following criteria:

	<u>Respiratory movements.</u>	<u>Intercostal retraction.</u>	<u>Flaring of nares.</u>	<u>Creptations Whezes</u>
Grade 0	Synchronised movement of abdomen and of thorax.	No retraction of the lower chest.	No dilatation of nares.	Not audible.

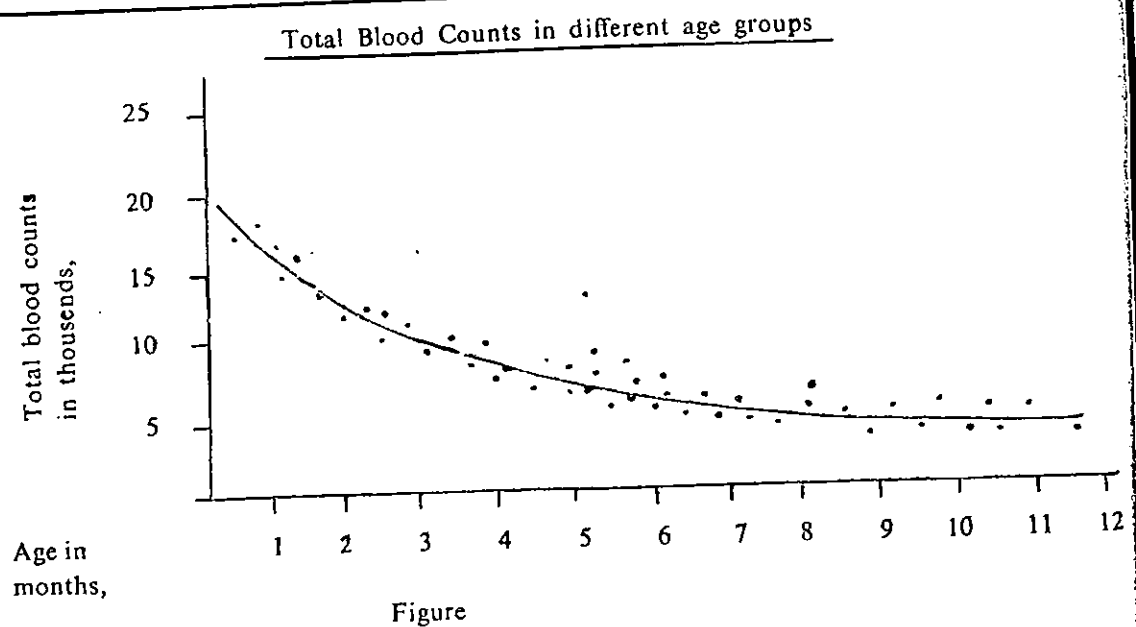
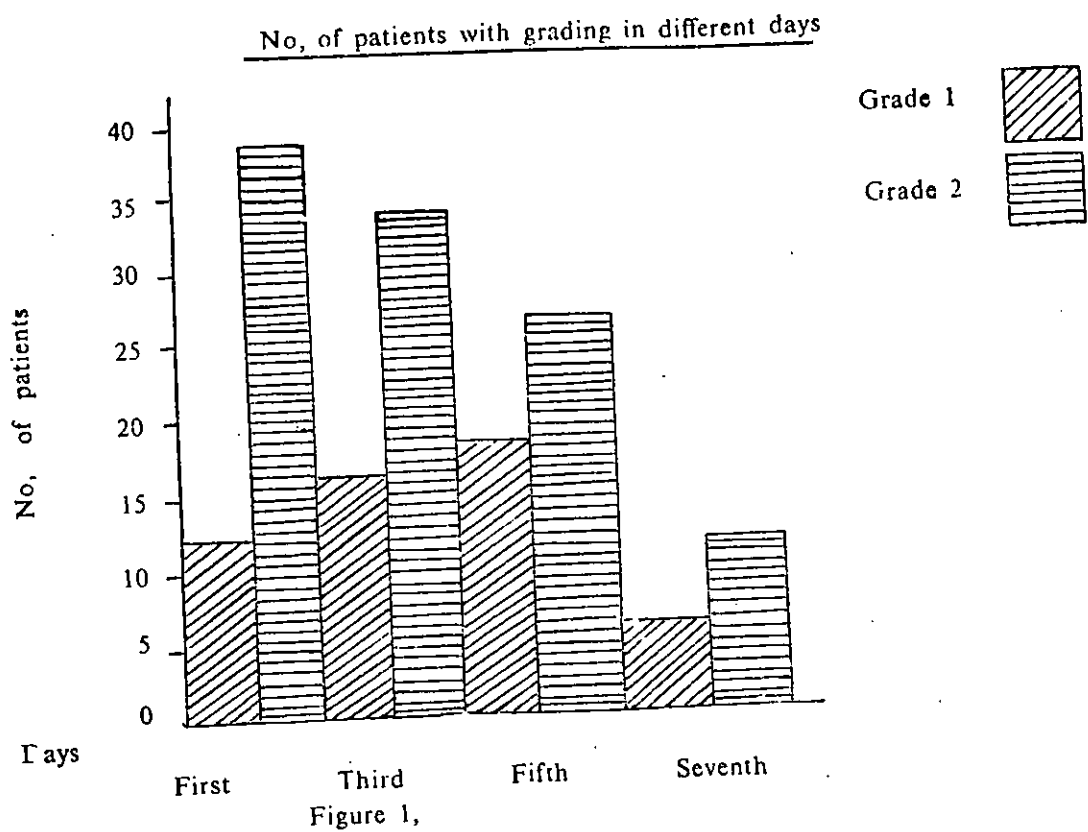
Grade 1	Lag on inspiration. Just visible.	Minimal.	Audible by stethoscope.
Grade 2	See-saw.	Marked.	Audible by naked ear.

(Based on Silverman, W. Paediatrics 18,614, 1956)

12 of these patients were grouped in grade 2 and 38 in grade 1 on the next morning after the admission. Every day these patients were graded according to the clinical findings as mentioned above. The x-rays (done in the photographic plate) were seen for the over expansion of the lungs. It was very difficult to assess the other lung in these plates.

Results

Of the 50 patients studied 12 had grade 2 and 38 had grade 1 respiratory problems. The blood count which was done at the hospital laboratory was usually on the 2nd. days after the admission. The average count was within the normal ranges (Figure 2). The x-rays were done within the 4 days of admission, only 2 patients had the x-ray repeated. The expansion of the lung fields were up to the 7-9 intercostal spaces. It was difficult to assess whether these x-rays were taken in erect or lying positions and none of these plates were reported by radiologists.



On the third day 16 patients had grade 2 and 34 had grade 1 respiratory problems inspite of the parenteral antibiotics. All of the patients receiving dexamethasone parenterally or orally were in the same grade 2 after two days of therapy. The total counts were not repeated in any of the patients.

On the fifth day 18 patients developed grade 2 and 27 had grade 1 respiratory problems. Two patients died on the fourth night after admission. The cause of death was noted as cardio respiratory failure on the case notes. They were given oxygen, dexamethasone parentally and were infused 5% Dextrose saline. Their ages were four and two months respectively, both of them were female infants. One was graded as 0 and two were discharged because of the improved condition as mentioned in the chart.

On the seventh day there were still 6 patients with grade 2 respiratory problems. 12 patients were grouped in grade 1 and six were grouped in grade 0. Others were discharged while a few were still receiving the antibiotics.

As evidenced in Fig 1 there was no improvement in the condition of the patients inspite of the use of the antibiotics, corticosteroids and bronchodilators. The condition was the worst during the midweek and then gradually subsided. The total count was within the normal range, only one case had a high cell count. Those patients who died also had the total counts within the normal range.

Discussion

A major problem when considering the epidemiology and, indeed the management of chest infections in infancy is the relationship between the frequency and the cost of treatment, in the under developed countries. Paediatricians have long suspected that the commonest acute respiratory disorders of infants is bronchiolitis. This is an acute respiratory disorder which tends to occur epidemics and is characterised by the rapid development of the respiratory distress and pulmonary over distension due to the obstructive lesions within the bronchioles. Viruses have emerged as the main aetiological agents. The principal virus responsible is the respiratory syncytial virus (RSV) initially recovered from patients with bronchiolitis by Chanock et al in 1960 during the outbreak in the Washington area. Recent studies have confirmed that this

virus can be isolated or detected serologically in 40 to 60 percent of the cases of bronchiolitis. Detection rate exceeds 70 percent when the result of immunofluorescent studies and virus isolation from nasopharyngeal aspirates are considered together.

Although RSV appears to play a major role in the aetiology of bronchiolitis a similar picture has been described with the adenovirus, parainfluenzavirus, rhinovirus and enteroviruses. The role of bacteria has been debated for many years and has not been fully elucidated. One of difficulties in hospital based studies has been the administration of antibiotics to affected infants. Although the virological study facilities are not available here, this study supports that the routine use of the antibiotics does not alter the course of the disease. Corticosteroids has also not altered the prognosis of the cases and are of no proved value. The value of white cell count is debated as this is slightly or marginally elevated.

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References

1. Jillefe. D.B., Stanfield. J. P., (1981) "Diseases of children in the Subtropics and Tropics", 257-269, third edition, Arnold.
2. Morly. D., (1973) "Paediatric priorities in the developing World" Second Edition Butterworth.
3. Silverman. W., (1956) "Paediatrics" 18, 614,
4. Sharma, P. R., (1982) "Diseases of children then and now", Journal of Institute of Medicine,