

**TREATMENT AND MANAGEMENT OF
CHRONIC BRONCHITIS**

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Introduction

Today, many countries and their peoples enjoy high standards of living, yet bronchitis remains a world-wide problem. Statistics show that bronchitis is one of the most frequently diagnosed major disorder in European countries (Nairman S). Bronchitis is a cause of morbidity and also untold economic loss (1) in terms of loss of working days, as chronic bronchitis in its advanced stages is disabling, and also (2) in terms of social benefits such as hospitalisation and treatment.

Definitions

Chronic bronchitis is defined by the U.K. Research Medical Council as "a condition associated with excessive tracheobronchial mucus production sufficient to cause cough with expectoration for at least three months for more than two consecutive years."

There is a general tendency to use the term chronic bronchitis more loosely as a blanket term to describe the older patient with chronic cough, sputum production and recurrent chest infection, however, more accurate and scientific use of terminology should be encouraged.

Bronchitis rarely presents in isolation. It is usually accompanied by emphysema (pathological inflammation of the air spaces or destruction of the acinus), bronchial obstruction and inflammation. Often this spectrum is described as chronic obstructive airways disease (COAD). COAD is used to describe patients who have chronic bronchitis, emphysema or both.

Aims

The aims of this dissertation were:

1. To review the definitions associated with this disease;
2. To analyse conventional therapy and current attitudes on treatment;
3. To investigate the distribution of the disease in a sample of Maltese patients;

4. to study the main bacteria found in the respiratory tracts of chronic bronchitics during exacerbations in a sample of Maltese patients;
5. To compare the results obtained from sputum culture to those obtained by bronchoscopic aspirations;
6. To make recommendations on antibiotic therapy.

Methodology

Retrospective studies were carried out on:

1. 107 admissions due to chronic bronchitis. The patients studied represent all the chronic bronchitics who were admitted under the care of Dr Cacciottolo in wards M5 and M6 of St Luke's Hospital between January 1989 and June 1991. Re-admitted patients were considered as separate patients, unless otherwise stated. The patients' medical notes were used to obtain the data for this study.
2. Positive cultures of all the sputa cultures of chronic bronchitics sent to the Microbiology Department of St Luke's Hospital for investigation in February and March 1991.
3. The bacteriological results of samples obtained by bronchoscopic methods over a year from patients with lower respiratory tract infections.

Results and Discussions

1. Age

Fig 1 shows the number of chronic bronchitics in each age group in study (i) as a percentage of the general population in each age group according to the Demographic Review 1990 (to eliminate bias due to variations in the population of each age group). A clear increase in the incidence of chronic bronchitis with increase in age in the sample studied is observed (Figure 1).

Age Distribution

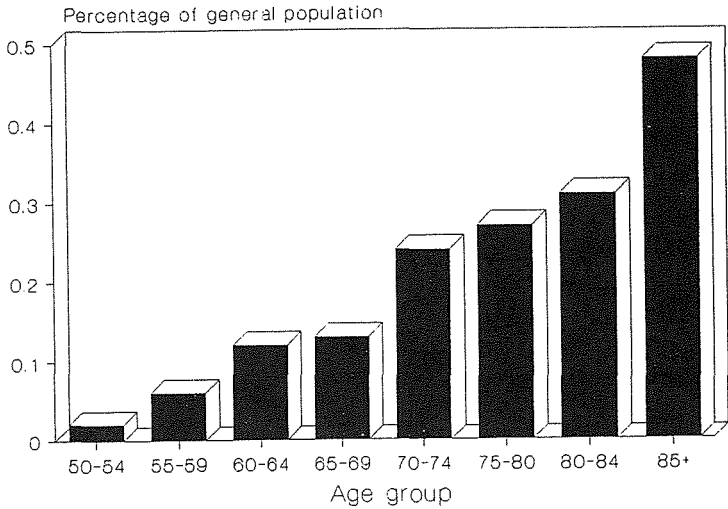


Fig. 1

2. Sex

From the sample of chronic bronchitics in study (i), it was found that as reported by Crofton and Douglas, Fry, and also by Nairman, there is a marked constant excess in the incidence of chronic bronchitis in males.

Table 1

Sex	No.	% of sample	Ratio
Male	100	93.5%	14.3
Female	7	6.5%	1.00

3. Mortality

There are great international variations in the death rate for bronchitis which may partly reflect differences in diagnostic patterns and labels. What is certificated as the cause of death may be somewhat arbitrary especially in the very old.

According to statistics obtained from the Health Information Systems Unit, the total number of deaths reported to be due to chronic bronchitis and emphysema for the year 1990 was 35, representing 1.3% of total deaths. 91.4% (32) of these were males, and 8.6% (3) were females, amounting to 8.6% of deaths due to chronic bronchitis. The percentage of all deaths for 1990 reported to be caused by chronic bronchitis was 2.4% for males and 0.2% for females (Figure 2).

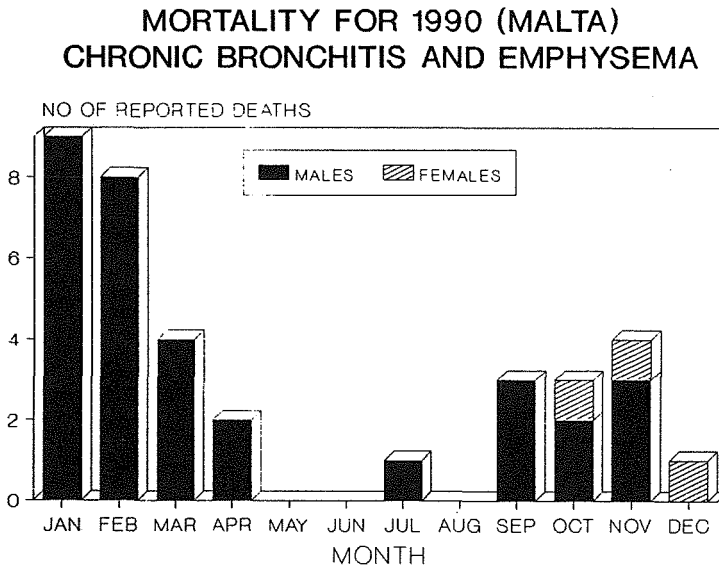


Fig. 2

4. Seasonal Variations

Most authors use mortality as an indicator of seasonal variations, although it may be argued that mortality statistics are an inadequate index of the frequency and distribution of this disease.

Figure 2 shows clearly that in fact in Malta there is a higher mortality rate in the winter months, from January to March, which agrees with the observations made by Crofton and Douglas.

A higher incidence of chronic bronchitis in the winter months is also indicated when considering the number of hospital bed-days per quarter occupied by the sample surveyed in study (i) (Figure 3).

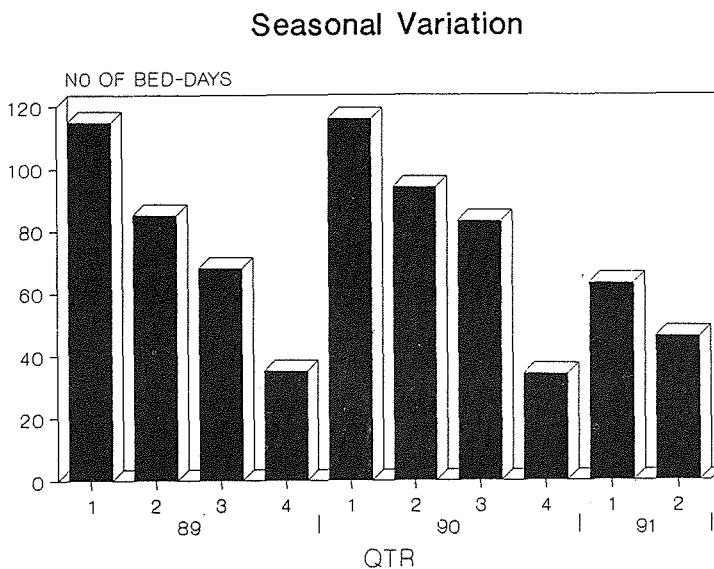


Fig. 3

5. Effect of Smoking

The correlation between smoking and incidence of chronic bronchitis has been studied by Fry, who found that the incidence of chronic bronchitis in the general population is higher amongst smokers. In a study on males it was observed 46% of those suffering from chronic bronchitis were smokers, 38.5% were ex-smokers and 15.55% had never smoked.

If one had to consider the males only out of the sample in study (i), a similar trend is observed. One would find that 48% were smokers, 43% were ex-smokers and 9% had never smoked.

6. Locality

The area of residence of each different patient was noted and coded into six districts as in the Demographic Review. The figures obtained were reported as per 100,000 of population in the district. In fact it was found that the highest incidence of chronic bronchitics from this sample occurred in District 1, the Inner Harbour Region, in which a Power Station is located as well as the Malta Drydocks, both of which may be implicated in atmospheric pollution. District 1 also includes the major town, through which there is a large daily passage of traffic: hence higher amount of car exhaust are also to be expected in the towns and villages within this district than in other districts, which doubtlessly contributes to the higher incidence of the condition in this district (Figure 4). It must be noted that in this survey, re-admissions were not considered.

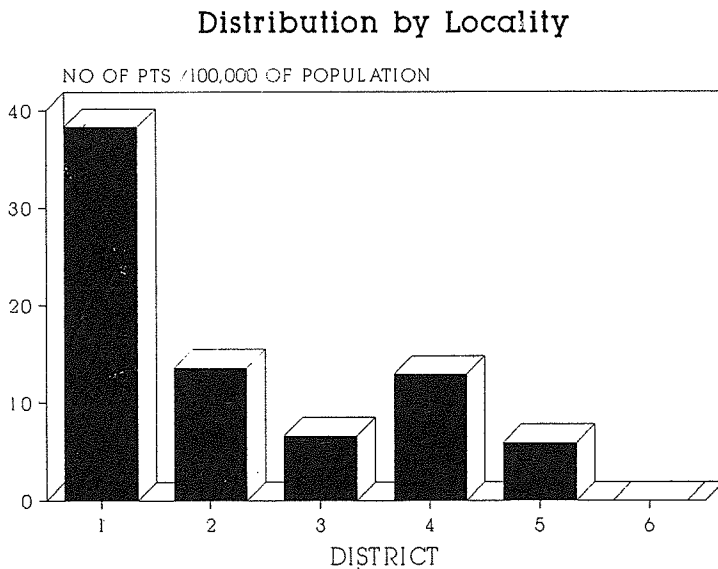


Fig. 4

7. Treatment

Obtaining samples for microbiological investigation by bronchoscopy reduces the risk of contamination of the sample, as the sample is obtained directly from the lower respiratory tract unlike sputa samples which may become contaminated by organisms in the upper respiratory tract. In fact it was seen that the results obtained from testing of sputa samples are quite reliable as the results compare quite well to those obtained from bronchoscopic aspirations. It was also observed from both study (ii) and also study (iii) that the main bacteria found in the respiratory tract of patients with exacerbations of chronic bronchitis are *Beta-haemolytic streptococci*, *H. parainfluenzae* and *H. influenzae*.

Sensitivity testing shows that ampicillin and tetracyclines are the best choice as first-line treatment. The relatively low incidence of the other organisms found in comparison to the above mentioned three leads one to suspect that most of these may be hospital-acquired. In cases where ampicillin and tetracyclines are not effective, clavulanate-potentiated amoxycillin or cephalosporins should be used. Co-trimoxazole is not recommended due to a high degree of resistance to both its components, probably resulting from over-prescription of the drug. It is worth noting that in those cases where an antibiotic was prescribed before the results of sensitivity testing performed on the sputa samples surveyed were available, 38.2% of the antibiotics prescribed were ineffective because one of the organism in question was found to be resistant to that particular antibiotic. This indicates the advisability of prescribing antibiotics on microbiological guidance.

The following results were obtained:

Table 2

Cases where a single organism was reported	80
Cases where multiple organisms were reported	96

Frequency of occurrence of each organism: (Percentages are of all organisms found).

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Table 3

	Sputa	Key	Bronchoscop
Beta-Haemolytic streptococcus	128	44.4%	A 23 46.0%
Haemophilus influenzae	32	11.1%	B 5 10.0%
Haemophilus parainfluenzae	60	20.8%	C 11 22.0%
Enterobacteriaceae	20	6.9%	D 3 6.0%
Pseudomonas aeruginosa	16	5.6%	E 2 4.0%
Acinetobacter anitratus	8	2.8%	F 2 4.0%
Streptococcus pneumoniae	12	4.2%	G 2 4.0%
Staphylococcus aureus	12	4.2%	H 2 4.0%

Conclusions and Recommendations

The conclusions and recommendations that can be drawn from the patients studied in survey (i) are basically the following:

1. The incidence of chronic bronchitis increases with age;
2. Chronic bronchitis afflicts mainly the male population;
3. Exacerbations are most frequent and severe in the months of January, February and March;
4. Most chronic bronchitics are or were smokers: early prevention by educating the patient as well as helping smokers to rid themselves of their habit may be important steps in the control of this condition.

From studies (ii) and (iii) the following conclusions and recommendations can be made:

1. The three most frequently found bacteria in the respiratory tract of patients with exacerbations of chronic bronchitis are (i) *Beta-haemolytic streptococci*; (ii) *Haemophilus parainfluenzae* and (iii) *Haemophilus influenzae*;

2. Sputa samples are quite reliable samples on which to carry out microbiological investigations; contamination does not appear to be a major problem;
3. It is recommended that in infectious episodes, the facilities at the microbiological department be utilised fully and the guidance offered should be made use of when prescribing an antibiotic;
4. When results of microbiological investigations are not available, ampicillin and tetracycline are good choices as first-line antibiotics, whereas in cases where these are ineffective, clavulanate-potentiated amoxycillin or cephalosporins are recommended as second-line treatment.

References

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