ORIGINAL ARTICLE

Tuberculosis In Calabar: A Ten-Year Review (1994-2003)

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ABSTRACT

Background: *The aim of the study is to determine the pattern of tuberculosis as seen in Calabar over 10years (1994-2003).*

Methods: *A ten-year retrospective study (1994 2003) was carried out to evaluate the pattern of tuberculosis among subjects in Calabar, Nigeria. A total of 6,737 cases of confirmed pulmonary and extrapulmonary tuberculosis seen during the period of survey were reviewed. The cases were drawn from the Infectious Disease hospital (IDH) Calabar, University of Calabar teaching hospital (UCTH), and TBL unit of the Ministry of Health, Calabar. Subjects, apart from being symptomatic were confirmed to have Pulmonary Tuberculosis (PTB) by Ziehl-Neelsen's sputum staining technique. Positive confirmation was attained if a patient's sputum was positive for acid fast bacilli on at least two separate times in line with the World Health Organisation's (WHO's) recommendation. In addition, some patients had chest radiograph, and those with evidence of pleural effusion were confirmed by pleural aspirate. However, cases with extrapulmonary tuberculosis (EPTB) were considered separately and the site of the lesions noted.*

Results: *The results revealed some progressive yearly increase in the number of tuberculosis [TB] cases over the 10-year period with more children being diagnosed. Tuberculosis of the spine was the most common type of extrapulmonary tuberculosis among the patients with EPTB. The treatment outcome over the period was not satisfactory with a cure rate of 57% and a mean mortality rate of 14% (with a range of 12% to 17%), and a default rate of 18%.*

Conclusion: *The implication is that either the available tools are not properly utilized or extra-measures will be required to contain the scourge. We therefore recommend an increased supervision of the intensive phase of therapy and provision of facilities for culture and drug sensitivity testing at treatment centres, in case drug resistance is a factor.*

KEY WORDS: *Tuberculosis; Pulmonary; Extrapulmonary; Pattern; Calabar.*

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INTRODUCTION

Tuberculosis (TB) is the world leading curable infectious killer with about 20,000 people developing active TB daily and 5,000 dying from the disease[1]. Studies in different parts of the world and Africa have demonstrated the rising prevalence of tuberculosis especially pulmonary tuberculosis, hence, the declaration of TB by World Health Organization (WHO) as a global emergency in 1993 [2,3]. Current annual estimate suggests that 9 million new cases of tuberculosis and 3 million deaths from tuberculosis occur globally[4]. This estimate is expected to rise to 10.2 million people by 2005 largely because of the over 20% increase in TB epidemic in African countries over the last five years. In Nigeria, it is projected that over a quarter of a million TB patients are living in the country [5].

The recent upsurge in the prevalence of tuberculosis globally and especially in Nigeria has been attributed to the pandemic of the Human Immune Deficiency Viruses (HIV) infection and the Acquired Immune Deficiency Syndrome (AIDS) and adverse harsh economic condition in the country [5,6].

Though accurate statistics are lacking, local experience and clinical observations in hospitals and health institutions in Calabar indicate a rise in the prevalence of tuberculosis in the city in the last few years. The aim of this study is therefore to evaluate the characteristics of tuberculosis in Calabar over a 10-year period (1994-2003). The various factors, which may be responsible for any rising incidence of TB in our environment, will be elucidated. This will help evolve strategies that will halt the spread of the disease, which is treatable and curable.

SUBJECTS AND METHOD

The study was carried out at the 3 main treatment centres for tuberculosis in Calabar namely the University of Calabar Teaching Hospital, Infectious disease hospital and tuberculosis/leprosy units of the state ministry of health Calabar. Permission was obtained from the relevant authorities. The study involved the review of the case notes of patients treated for tuberculosis between 1994 and 2003 at the various centres. Subjects selected for the survey were those who met at least two out of three diagnostic criteria for

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PTB namely: (a) clinical features (b) positive chest radiograph and (c) positive acid, alcohol fast barclli (AFB) in at least 2 sputum sample in line with World Health Organization recommendation[7] and EPTB cases were confirmed purely on clinical grounds. Thus after applying the above selection criteria, a total of 6737 subjects consisting of 4,423 males and 2,314 females were reviewed.

A thorough analysis of each patient's record was carried out using the case notes. Information extracted included socio-demographic data, duration of illness, characteristic and type of TB, nature of treatment received, pattern of complications, HIV status of patients where available and treatment outcome. The social classification of subjects was based on Registrar's general five point occupational scale modified to suit the Nigerian environment [8]. These were carefully recorded in an information sheet prepared for each patient and strict confidentiality was ensured.

All data collected were analysed using EPI inter version 6.5 computer software.

RESULTS

Table I shows the socio-demographic data of subjects reviewed as 4,423 males and 2,314 females formed the subjects of study. About 80% (5, 418) of the cases were adults while children were 20% (1319). However, the bulk of the patients were in socio-economic group IV and V.

Table II shows the characteristics of tuberculosis. TB of the spine was the most common type of extrapulmonary tuberculosis followed by miliary TB.

Figure 1 is the yearly distribution of the cases of PTB and EPTB. The total number of PTB cases was 5950 while 787 had EPTB. There was a slight increase in the number of cases seen in the last five years of review.

Figure 2 illustrates the pattern of clinical presentation of pulmonary tuberculosis. Pleural effusion topped the list of complications followed by pulmonary fibrosis and lung collapse. Finger clubbing was noted in a significant number of patients.

Figure 3 illustrates the treatment outcome of patients reviewed. With regard to treatment outcome, 57% of the patients responded to treatment and were discharged home, while 14% of the patients died and 21% did not respond to treatment. The HIV status of about 40% of the cases reviewed was known while 60% were not screened. However, 37% of those screened were sero positive. The mortality rate of 14% and default rate of 18% was noted among the cases reviewed.

Figure 4 shows the yearly distribution of PTB and EPTB cases during the period of review.

Table I. Socio-Demographic Characteristics Of The Subjects

Parameter	no./%
Age [Mean (S.D)]	42.14 ±15.3
5 - 18 years	1,319 (20)
18 - 70 years	5,418 (80)
Sex	
Male	4,423 (66)
Female	2,314 (34)
M/F Ratio	2 : 1
Weight (Range)	19 - 82kg
Mean (S.D)	46.3± 6
Acid Fast Baclli,	
Positive	5,684 (83)
Negative	1,053 (17)
Socio-economic Group of Patients	
I	99
II	235
III	677
IV	2695
V	3031

Table II. Characteristics of Tuberculosis

Characteristics	No./%	Male no/%	Female no/%
Pulmonary TB	5950 (88)	3895 (65)	2055 (35)
Extrapulmonary TB	787 (12)	528 (71)	259 (29)
Lymphadenitis	78	48	30
Miliary TB	172	117	55
Disseminated TB	18	72	46
TB Meningitis	94	67	27
Bone & Spinal TB	230	161	69
TB Abdomen	40	29	11
TB Pericardium	16	11	5
TB Breast	14	11	3
Cold Abcess	25	14	9
HIV Status Positive	989 (14)	519 (12)	470 (19)
Negative	1703 (25.3)	1056 (25)	647 (27)
Not Tested	4045 (61)	2210 (51)	1335 (55)

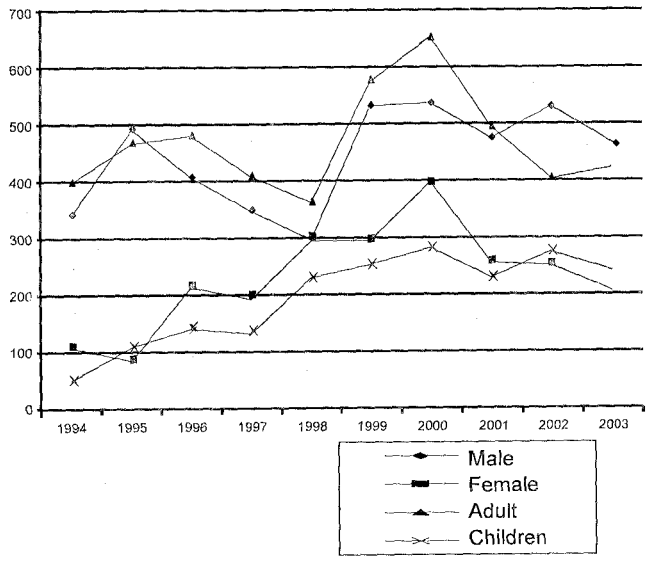

Figure1. Yearly Distribution of Subjects

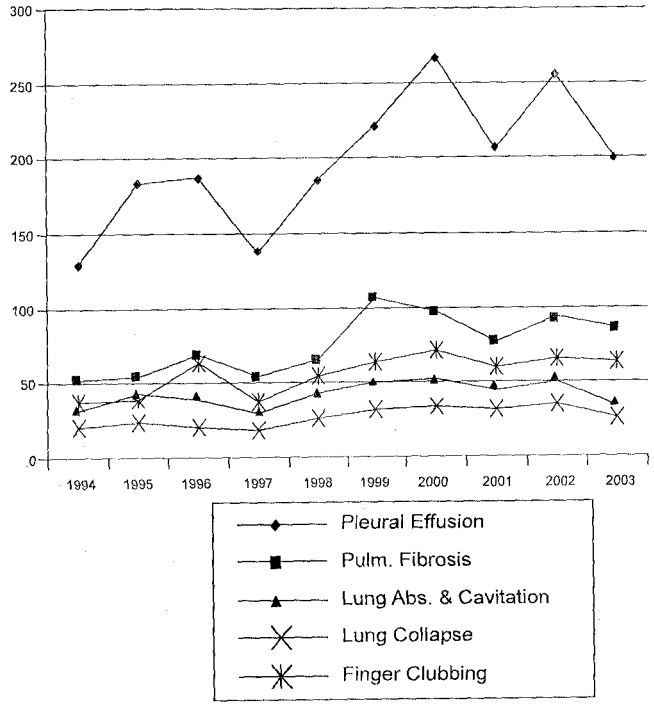

Figure 2 Pattern Complications of Pulmonary TB

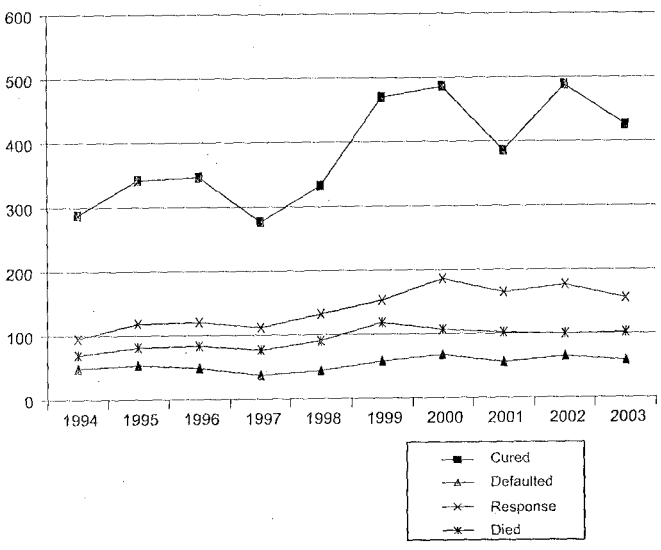

Figure 3. Treatment Outcome

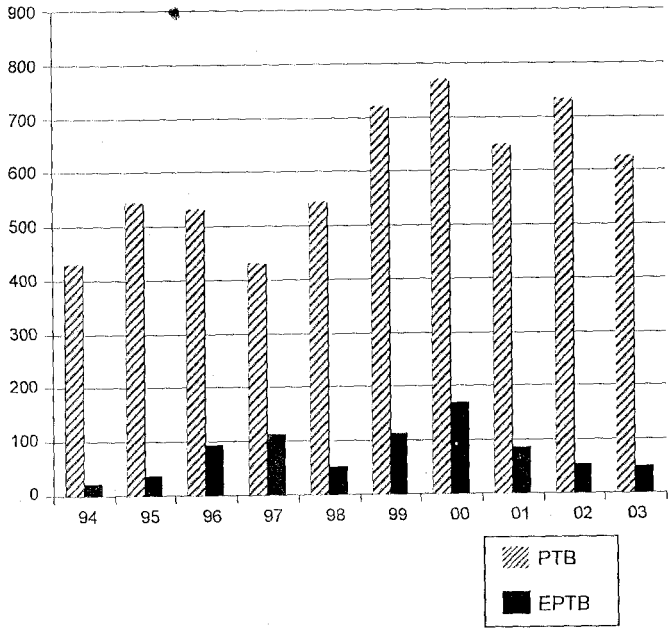

Figure 4. Yearly Distribution of PTB and EPTB Cases

DISCUSSION

This study amply illustrates the endemicity and pattern of TB in Calabar. The findings are consistent with those from other studies, which suggest that tuberculosis is a major problem in Nigeria and that it is not abating as in other sub-Saharan African countries, despite strategies adopted to stem its growth including the DOTS [9-12].

It further illustrates that PTB remains the dominant manifestation of *mycobacterium tuberculosis* infection in our environment in spite of HIV disease, accounting for 88% of cases while EPTB accounts for just 12%. This is in keeping with global outlook, in which PTB accounts for 90% of TB cases (smear positive and smear negative being

45% each) while EPTB accounts for 10% [13]. Surveys in Kenya and Tanzania done between 1966 and 1984, demonstrated that 90% of patients with TB had pulmonary and the others extapulmonary [14]. With the emergence of HIV disease, forms of TB that were previously uncommon such as pericarditis, peritonitis and miliary TB are now commonly reported [14,15]. The low incidence of extrapulmonary TB in this study could be attributed to the low sensitivity and specificity of the diagnostic criteria, which was done on clinical grounds, hence under diagnosis.

The progressive increase in the number of patients diagnosed with TB in the last 5 years of the review may be attributed to a number of factors, which include increased awareness of the availability of treatment through public enlightenment programme, and increase in the number of HIV infection, which may trigger up latent TB infection [16].

The number of patients tested for HIV in the survey (40%) was small compared with the total number of cases reviewed, 37% of which were sero-positive. The reason for the low surveying figure was because routine HIV screening was at the discretion of the consulting doctor. The 37% sero-positivity rate is quite high, and is at variance with results from most parts of Nigeria. Salami *et al* [12] in Ilorin, in a nine year review found a rate of 12.6%, Idoko *et al*[17] in Jos (1994) 10.4%, Ekott[18] in Calabar (2000) 11%, National survey 1995/96 (13.1%)[19] and Esu-William *et al* [20] (1997) 16.2%. The reason for the difference may be the inclusion of EPTB in the analysis, which most of the other studies did not include. Definitive confirmatory diagnosis of EPTB can be difficult and unusual [21]. Although the rate is similar to that (36%) obtained by Wokoma[22] in Port Harcourt, the sample size in that study was too small for a good statistical inference to be drawn. However, the trend in the country shows a general increase in the number of TB patients testing HIV positive.

Of the EPTB cases, tuberculosis of the spine (Pott's disease) was the most common, accounting for over 30% of the cases. This is similar to that found in the tropics[23]. It is however, different from that found in India where disseminated TB cases are the commonest[24] (excluding pulmonary TB). The reason for this difference is not readily apparent but may be related to the differences in the constitutional factors (e.g. age, genetic differences etc.) of the population and for the nature of the tubercle baccili. Constitutional as well as non-constitutional factors (e.g. marital status, social habits etc.) have been shown to influence progression of *Mycobacterium tuberculosis* infection to disease[25]. The high contribution of Pott's disease to the EPTB cases may be due to the ease of recognition of the associated vertebral collapse (gibbus) when it occurs. The severity of TB meningitis and miliary TB make it difficult for the diagnosis.

Finger clubbing observed in 8.2% of cases, confirms the assertion that, it is an uncommon occurrence in TB. In their studies, Kolawole *et al* [26] and Ekott[18] found incidence of clubbing to be 10% and 12% respectively. Finger clubbing is often associated with severe, extensive and destructive pulmonary lesions[27].

The observed progressive yearly increase in the incidence of TB, especially among children over the corresponding period, could suggest family cluster of cases in a socially defined environment, and calls for the screening of household members and treating cases detected.

The treatment outcome over the period was not satisfactory with a cure rate of 57% and a mean mortality rate of 14% inspite of DOTS introduced in 1997. The cure rate is significantly less than the 85% proposed by both WHO and NTBLCP[5]. Current regimen if well prescribed and administered can attain a cure rate of over 90% in a previously untreated drug sensitive infection[28]. This low cure rate is however not unique to our centre but may be a common phenomenon elsewhere in Nigeria. For instance in Ilorin, Salami *et al* [9] found a cure rate of 43.7%, which is much lower than ours. However, there is room for improvement, as Becham *et al* [29] in Pinetower, South Africa with a twice weekly DOTS (intermittent therapy) were able to achieve a 96% cure rate with 4 drugs without an intensive phase.

The mortality rate of 14% and 18% default are still unacceptably high. Therefore, more concerted effort is required to create awareness for early detection and intensive treatment since TB is curable. Late presentation and poor compliance may have contributed to the poor outcome.

Salami *et al* found poor compliance to be associated with old age, male gender, prior treatment default, unemployment, smoking, alcohol use and minimal disease despite free access to drugs. Furthermore, positive HIV status with attendant increased risk of adverse drug effect may be a contributing factor. Effort should therefore be made to prevent the spread of HIV as well as adequate treatment of the disease.

The high treatment failure rate of 21% may also suggest drug resistance. A case is therefore made for the provision of culture and drug sensitivity testing facilities at all treatment centres to address the issue and for the establishment of special treatment centre for resistant cases.

The limitations in this study include absence of culture/drug sensitivity testing facility, and low HIV screening rate; the role of smoking and alcohol use as it affects treatment outcome could not be assessed, due to poor documentation. These highlight the inherent problems of poor data collection in retrospective studies.

In conclusion, the results of our study indicate a high incidence of tuberculosis in Calabar although treatment outcome has greatly improved. Concerted effort should be made by medical personnels to look out for more cases of EPTB especially with the haematagenous spread of the infection in cases of HIV/AIDS. It therefore becomes quite imperative that the government, local and international non- governmental agencies should make further input to the TB control programme especially in low income countries of the world as Nigeria.

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