International Journal of Medical and Health Research
www.medicalsciencejournal.com
ISSN: 2454-9142
Received: 22-01-2024, Accepted: 14-02-2024, Published: 08-03-2024
Volume 10, Issue 2, 2024, Page No. 6-10

Pattern of tuberculosis presentation and common clinical presentations at a tuberculosis treatment center in Enugu state, Nigeria

Hope Obiageli Nwoga*, Chukwuma Paulinus Igweagu, Gabriel Chukwuemeka Umeh
Department of Community Medicine, Enugu State University of Science and Technology College of Medicine, Enugu, Nigeria

Abstract
Background: Tuberculosis (TB) has remained a public health concern despite improvements in its management over the decades. The aim of this study was to assess the pattern of TB presentation and common clinical presentations at a tuberculosis treatment center in Enugu State Nigeria.
Methods: The study was a 5 year retrospective cohort study (2018-2022) of all TB cases treated at the center. All the data were retrieved from the patient's folders at the TB clinic and entered into a pro forma.
Results: The mean age was 38.91±17.39. Most of the cases were in the 30-39 year age group (24.8%). About 2/3 of them were males (61.9%) and urban dwellers (65.0%). Most had secondary education (46.2%) and traders (27.5%). About half of them were married (51.6%) while almost all were Igbos (95.4%). Most of the cases were seen in 2022. Majority of the patients had pulmonary TB 425(88.0%), 54(11.2%) had extra-pulmonary while 4(0.8%) had both pulmonary and extra-pulmonary TB. None of the socio-demographic characteristics significantly affected the type of TB, however, pulmonary TB was more in males while extra-pulmonary TB was more in females. Most of the extra-pulmonary cases were abdominal 17(29.3%) and spinal 16(27.6%). Majority of the patients had productive cough± hemoptysis 444(91.9%) followed by weight loss 422(87.4%) and weakness 280 (58.0%).
Conclusion: Generally TB was more common among the males while extra pulmonary wasmore among the females. The most common extra-pulmonary site was the abdomen while the commonest clinical symptoms were cough and weight loss.
More young adult males should be screened routinely for TB. Targeted strategies should focus on females for early diagnosis and treatment of extra-pulmonary TB due to its non- classical way of presentation.

Keywords: Pulmonary tuberculosis, extra-pulmonary tuberculosis, clinical presentation, Enugu state, Nigeria

Introduction

Tuberculosis (TB) is one of the major public health problems in Nigeria and a leading cause of morbidity and mortality among infectious diseases globally [1]. Nigeria has the highest TB burden in Africa accounting for 4.4% of the global incidence of TB [2]. It is an airborne, infectious disease caused by bacteria that primarily affect the lungs. Approximately one-third of the world's population carries Mycobacteria Tuberculosis. The World Health Organization (WHO) declared TB a "global emergency" in 1993 [3]. In 2019, an estimated ten million people developed TB while 1.5 million died from the disease, out of which 208,000 of them were HIV-positive [1]. The 1990 World Health Organization (WHO) report on the global burden of disease ranked TB as the seventh most morbidity-causing disease in the world, and expected it to continue in the same position up to 2020 [3].

Although TB is a completely curable and preventable disease there is an associated high morbidity and mortality, thus, making it an important socio-economic problem [4]. Most of the deaths occur in low and middle-income countries [4]. TB is called an opportunistic infectious disease because it takes advantage of individuals with weakened immune systems. Consequently, the risk of TB infection is higher among HIV-positive individuals [5-7].

The disease is more prevalent in the productive age group of 15-54 years and this has an enormous impact on the economy of the affected families and the country at large. The number of TB cases is increasing in Nigeria due to some obvious reasons. There is a lack of awareness of the disease and its associated symptoms, which makes the patients present late to the hospital when the disease has progressed. Another important reason is the social stigma associated with TB. Women are thrown out of their families, some people lose their jobs, and children are thrown out of school because of the superstitious belief that TB is deadly and those who live in proximity to any TB patient are at risk of death. Furthermore, many of the patients believe that they will most likely die if they have TB, so they go into a state of denial and/or depression and may eventually die.

Extra pulmonary TB (EPTB) occurs outside the lungs and its spread may be hematogenous or through the lymphatic system. The TB bacteria may remain dormant for years at a particular site before causing the disease. All organs of the body can be infected by EPTB including the skin, bones, joints, glands, and others with a wide range of clinical manifestations, thus leading to difficulty and delay in its diagnosis [8].

Materials and Methods

Study area

The study was conducted at the TB clinic and DOTS center of Enugu State University of Science and Technology Teaching Hospital (ESUT-TH) Parklane Enugu. This is where patients with tuberculosis receive anti-tuberculosis treatment. The center provides services for TB patients from within and outside Enugu State. ESUT-TH Parklane is one of the tertiary health facilities in Enugu State and is located within Enugu Metropolis.

Study design
The study was a 5-year retrospective cohort study (2018-2022) of all TB cases treated at the chest and DOTS clinic of ESUT-TH Parklane Enugu.

Study population
All the patients who received TB care at the center within the 5 years

Inclusion criteria
Have received TB care at the DOTS center between 2018 and 2022

Exclusion criteria
Cases with missing data on clinical presentations.

Data collection methods
All the data were retrieved from the patient's folders at the TB clinic and entered into a pro forma.

Statistical analysis
Data was analyzed with SPSS version 25 and presented as frequencies, percentages, mean, and standard deviation. Chi-squared test was used to test for associations between variables with significant levels placed at p-value ≤0.05.

Ethical approval: Ethical approval for this study was obtained from the Research and Ethics Committee of ESUT-TH Parklane. Confidentiality was maintained by not putting names on the pro forma.

Results

Table 1: Socio-demographic characteristics of tuberculosis patients

Variable	Frequency (N=483)	Percent
Age (years)		
Mean ±SD	38.91±17.39	
Age in groups (years)		
0-9	14	2.9
10-19	41	8.5
20-29	99	20.5
30-39	120	24.8
40-49	83	17.2
50-59	55	11.4
60-69	38	7.9
≥70	33	6.8
Gender		
Male	299	61.9
Female	184	38.1
Residence		
Rural	169	35.0
Urban	314	65.0
Educational level		
None	15	3.1
Primary completed	109	22.6
Secondary completed	223	46.2
Tertiary completed	136	28.2
Occupation		
Civil/public servants	42	8.7
Trading	133	27.5
Crafts/artisans	86	17.8
Farmers	34	7.0
Unemployed	111	23.0
Students	77	15.9
Marital status		
Single	207	42.9
Married	249	51.6
Divorced/separated	4	0.8
Widow/widower	23	4.8
Ethnicity		
Igbo	461	95.4
Hausa	13	2.7
Yoruba	1	0.2
Others	8	1.7

Table 1 shows the socio-demographic characteristics of the TB patients used for the study. The mean age was 38.91±17.39. Most of the cases were in the 30-39 year age group (24.8%). About 2/3 of them were males (61.9%) and urban dwellers (65.0%). Most had secondary education (46.2%) and traders (27.5%). About half of them were married (51.6%) while almost all were Igbos (95.4%).

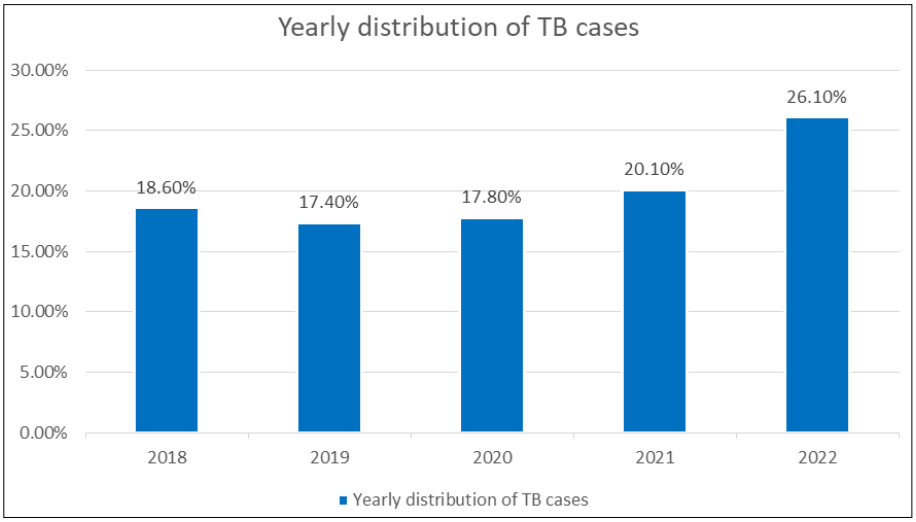

Fig 1

Figure 1 shows the yearly distribution of TB cases. Most of the cases (26.10%) were seen in 2022.

Table 2: Status of cases at presentation by year

Variable	Status of presenting case			
	New case N (%)	Relapsed case N (%)	DR case N (%)	TALF N (%)
Year				
2018	81(90.0)	6(6.7)	0(0.0)	3(3.3)
2019	78(92.9)	6(7.1)	0(0.0)	0(0.0)
2020	74(86.0)	8(9.3)	1(1.2)	3(3.5)
2021	82(84.5)	7(7.2)	0(0.0)	8(8.2)
2022	110(87.3)	6(4.8)	3(2.4)	7(5.6)

DR; Drug Resistant, TALF; Treatment After Loss to Follow-up

New cases of TB were more in 2019 (92.9%) with least in 2021 (84.5%). Relapse cases progressively increased from 2018 (6.7%) through 2020 (9.3%) and then decreased progressively from 2021 (7.2%) to 2022 (4.8%). TALF cases increased from 2019 (0.0%) through 2021 (8.2%) before its decline in 2022 (5.6%).

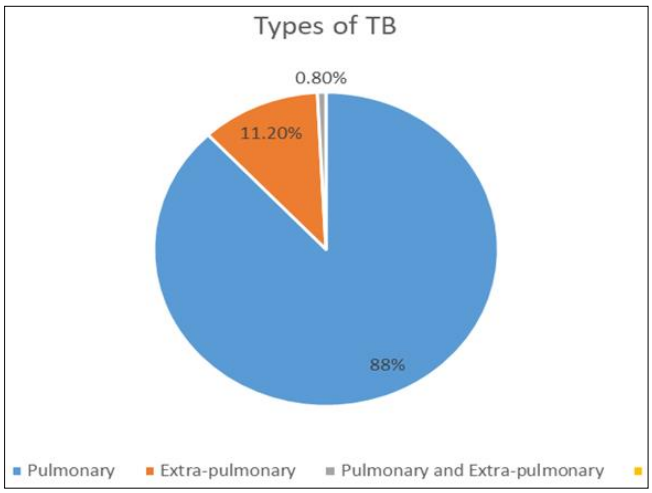

Fig 2

Figure 2 shows that the majority of the patients had pulmonary TB 425(88.0%), 54(11.2%) had extra-pulmonary while 4(0.8%) had both pulmonary and extra-pulmonary TB

Table 3: Bivariate analysis of socio-demographic characteristics and type of TB

Variable	Type of TB			X2	P value
	Pulmonary N (%)	Extra-pulmonary N (%)	Pulmonary and extra-pulmonary N (%)		
Age in groups (years)					
0-9	11(78.6)	3(21.4)	0(0.0)	10.938	0.691
10-19	32(78.0)	8(19.5)	1(2.4)		
20-29	91(91.9)	8(8.1)	0(0.0)		
30-39	107(89.2)	11(9.2)	2(1.7)		
40-49	71(85.5)	11(13.3)	1(1.2)		
50-59	49(89.1)	6(10.9)	0(0.0)		
60-69	34(89.5)	4(10.5)	0(0.0)		
≥70	30(90.9)	3(9.1)	0(0.0)		
Gender					
Male	270(90.3)	27(9.0)	2(0.7)	3.961	0.138
Female	155(84.2)	27(14.7)	2(1.1)		
Residence					
Rural	147(87.0)	19(11.2)	3(1.8)	2.846	0.241
Urban	278(88.5)	35(11.1)	1(0.3)		
Educational level					
None	14(93.3)	1(6.7)	0(0.0)	5.728	0.454
Primary completed	94(86.2)	13(11.9)	2(1.8)		
Secondary completed	201(90.1)	20(9.0)	2(0.9)		
Tertiary completed	116(85.3)	20(14.7)	0(0.0)		

Occupation					
Civil/public servants	34(81.0)	8(19.0)	0(0.0)	11.328	0.333
Trading	117(88.0)	14(10.5)	2(1.5)		
Crafts/artisans	81(94.2)	4(4.7)	1(1.2)		
Farmers	32(94.1)	2(5.9)	0(0.0)		
Unemployed	93(83.8)	17(15.3)	1(0.9)		
Students	68(88.3)	9(11.7)	0(0.0)		
Marital status					
Single	179(86.5)	25(12.1)	3(1.4)	4.207	0.649
Married	224(90.0)	24(9.6)	1(0.5)		
Divorced/separated	3(75.0)	1(25.0)	0(0.0)		
Widow/widower	19(82.6)	4(17.4)	0(0.0)		
Ethnicity					
Igbo	404(87.6)	53(11.5)	4(0.9)		
Hausa	12(92.3)	1(7.7)	0(0.0)		
Yoruba	1(100.0)	0(0.0)	0(0.0)		
Others	8(100.0)	0(0.0)	0(0.0)		

Table 3 shows the bivariate analysis of socio-demographic characteristics and type of TB. None of the socio-demographic characteristics significantly affected the type of TB, however, pulmonary TB was more in males while extra-pulmonary TB was more in females.

Table 4: Extra pulmonary presentation of TB cases

Variable	Frequency	Percentage
Cervical lymph nodes	11	19.0
Spine	16	27.6
Abdomen	17	29.3
Brain	6	10.3
Pericardium	2	3.4
Submandibular lymph nodes	4	6.9
Epididymis	1	1.7

Table 4 shows the extra pulmonary presentation of the cases. Most of the cases were abdominal 17(29.3%) and spinal 16(27.6%) with that of epididymis being the least 1(1.7%).

Table 5: Common presenting symptoms

Common symptoms	Frequency	Percentage
Productive cough± haemoptysis	444	91.9
Loss of appetite	196	40.6
Fever	178	36.9
Night sweats	206	42.7
Chills	31	6.4
Weakness	280	58.0
Weight loss	422	87.4
Chest pain	208	43.1
Abdominal pain	27	5.6
Breathlessness	201	41.6
Swelling	51	10.6
Body ache	46	9.5
Bone pain	15	3.1
Headache	14	2.9
Memory loss	1	0.2
Cortical blindness	1	0.2
Seizures	1	0.2
Inability to walk	1	0.2

Table 5 shows that majority of the patients had productive cough± haemoptysis 444(91.9%) followed by weight loss 422(87.4%) and weakness 280 (58.0%). The least were memory loss 1 (0.2%), cortical blindness 1 (0.2%), seizures 1 (0.2%) and inability to walk1 (0.2%).

Discussion

There was a decline in the prevalence of TB between 2018 (18.6%) and 2019 (17.4%) after which there was a progressive increase from 2020 (17.8%) through 2022 (26.1%). The initial decline may be due to fear of stigma which might have pushed many patients to seek alternative sources of treatment rather than present at the health facility. Subsequently, with sustained awareness and de-stigmatization, more patients decided to present for diagnosis and treatment hence the progressive increase in the number of cases.

The incidence cases of TB increased between 2018 (90.0% of all cases) and 2019 (92.9% of all cases) before its decline from the year 2020 (86.0%). The subsequent decline may be due to an increase in awareness about its mode of transmission and active contact tracing employed in the state during these periods.

Cases of relapse increased progressively from 2018 through 2020 after which it declined from 2021 through 2022. Most of the relapse cases may be patients who completed their medications but did not do the final tests to ascertain a cure. Some of them may also be re-infections due to compromised immunity or exposure to infected persons. The later decline can be explained by better knowledge of the epidemiology of TB.

Drug-resistant cases were seen mainly in 2022. This can be explained by better diagnostic facilities instituted in the health facility. The clinic also receives referrals of suspected resistant cases which were diagnosed appropriately.

Loss-to-follow-up is a common finding with diseases that have long treatment times and chronic diseases. Most patients without good treatment supporters or those stigmatized can easily be lost-to-follow-up. This is also a known cause of resistance to anti-tuberculosis medications. Certain factors have been reported to determine the level of loss-to-follow-up such as distance of home from hospital, monthly income, and knowledge of TB [9]. With better contact tracing most of these patients are brought back to commence their treatment afresh. Some of them also return on their own after trying other sources for cure to no avail. Psychological support is very important for newly diagnosed TB cases to reduce the incidence of loss-to-follow-up.

In the present study, 88.0% of the patients had pulmonary TB, 11.2% had extra-pulmonary TB and 0.8% had both pulmonary and extra-pulmonary TB. This was similar to a national study from India [10] but higher than the report of

another similar study [11]. On bivariate analysis, no socio-demographic characteristics were significantly associated with the type of TB, however, pulmonary TB was more common in males than females and a similar study corroborated the finding [11]. Extra-pulmonary TB was more common in females than males. Other studies reported similar findings [11, 12]. The sites of extra-pulmonary tuberculosis (EPTB) may vary according to geographic location and population. Lymph node and pleural involvements in TB are direct extensions of the disease from lung parenchyma. The most common sites of the EPTB in this study were the abdomen (29.3%) followed by the spine (27.6%) and then the lymph nodes (25.9%). This varied from the result of some similar studies where the commonest EPTB site was the pleura and lymph nodes [11, 13, 14].

The most common presenting symptoms of pulmonary TB are typical (cough and sputum) whereas extra pulmonary TB is difficult to identify not only by the patients but also by the physicians themselves. The majority of the patients had productive cough± hemoptysis. This was not surprising as most of the cases had pulmonary TB. Similar studies reported similar findings [15]. About 87.4% of the patients had symptoms of weight loss which was also observed in similar studies [11, 15, 16].

Conclusion

The study concludes that generally there were more cases of TB in 2022 when compared to the proceeding years while incident cases were more in the year 2019. The majority of the patients had pulmonary TB which was also more in males while extra-pulmonary TB was more among the females. The most common extra-pulmonary site was the abdomen while the commonest clinical symptoms were cough and weight loss.

Targeted strategies should focus on females for early diagnosis and treatment of extra-pulmonary TB due to its non-classical way of presentation. More young adult males should be screened routinely for TB.

Conflicting interest: The Author declares that there is no conflict of interest

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Informed consent: Informed consent was not sought for this study because it was a record-based retrospective study.

Acknowledgment: None

References

1. WHO Global tuberculosis report. World Health Organization. Available at, 2014. http://www.who.int/tb/publications/ global_report/ gtbr14_executive_summary. Pdf. Accessed 3/12/23
2. WHO Global tuberculosis report. Geneva: World Health Organization. Available at, 2020. http://apps.who.int/iris. Accessed 3/12/2023
3. Murray CJL, Lopez AD. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020: WHO Geneva, Switzerland, 1996. W 74 96GL-1/1996.
4. WHO/Tuberculosis Control Report 2008--Summary and overview of TB control systems in Nigeria. World Health Organization. Available at: http://www.unaids.org/sites/default/file s/media_asset/who2008globaltbreport _en_0.pdf. Accessed 11/11/2023
5. Mondal MNI, Shitan M. Relative Importance of Factors on Life Expectancy in the Low and Lower Middle Income Countries. Journal of Epidemiology,2014:24(2):117-124.
6. Mondal MNI, Shitan M. Impact of Socio-Health Factors on Life Expectancy in the Low and Lower Middle Income Countries. Iranian Journal of Public Health,2013:42(12):1354-62.
7. Mondal MNI, Shitan M. Factors Affecting the HIV/AIDS Epidemic: An Ecological Analysis of Global Data. African Health Sciences,2013:13(2):294-303.
8. Gonzalez OY, Adams G, Teeter, LD, Bui TT, Musser JM, Graviss EA. Extra-pulmonary manifestations in a large metropolitan area with a low incidence of tuberculosis. Int. J Tuberc Lung Dis,2003:7:1178-85.
9. Iweama CK, Agbaje OS, Umoke PCI, Igbokwe CC, Ozoemena EL, Omaka Amari NL, *et al*. Nonadherence to tuberculosis treatment and associated factors among patients using directly observed treatment short-course in north-west Nigeria: A cross-sectional study. SAGE Open Medicine,2021:9:1–15. DOI: 10.1177/2050312121989497
10. Central TB Division, Directorate General of Health Services, Ministry of Health and Family Welfare, New Delhi. RNTCP TB status Report,2007:1:10-13. Available at https://tbcindia.gov.in>8838543515TB India 2007. Accessed 23/1/24
11. Ajith M, Thomas A, Kothia JJ, Chandrakar B, Bargaje MD. Socio-Demographic characteristics of tuberculosis patients in a tertiary care hospital. International Journal of Medical and Health Research,2015:1(3):25-28.
12. Noertjojo K. Extra-pulmonary and pulmonary tuberculosis in Hong Kong. Int J Tuberc Lung Dis,2002:6(10):879-86.
13. Sreeramareddy CT, Panduru KV, Verma SC, Joshi HS, Bates MN. Comparison of pulmonary and extrapulmonary tuberculosis in Nepal- a hospital-based retrospective study, BMC Infectious Diseases,2008:8:8. doi: 10.1186/1471-2334-8-8.
14. Siddharam SM. Treatment outcome of tuberculosis patients registered at dots centre in a teaching hospital, south India. International Journal of Biological Medicine Research,2011:2(2):487-489.
15. Odusanya OO, Babafemi JO. Patterns of delays amongst pulmonary tuberculosis patients in Lagos, Nigeria. BMC Public Health,2004:4:18. doi: 10.1186/1471-2458-4-18
16. Gamil QO, Mohamed II, Yahia AR. Comparison of the Clinical and Socio-Demographical factors in Pulmonary and Extra Pulmonary Tuberculosis patients in Yemen. Journal of Clinical and Diagnostic Research,2011:5(2):191-195.