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Treatment outcome of tuberculosis cases seen at the University Hospital Center of Fenoarivo

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ABSTRACT

Introduction: Tuberculosis remains a major public health burden in developing countries such as Madagascar. The results knowledge of the instituted treatment constitute a capital step in the management of this pathology. The objective of our study is to evaluate the results of tuberculosis management in the Fenoarivo hospital. **Methodology:** This is a retrospective, descriptive study evaluating the results of tuberculosis treatment notified at the diagnosis and management center of the Fenoarivo University Hospital during the period from Jan 01,2012 to December, 31 2016.

Result: During our study, 1911 patients were included with a male predominance (sex ratio of 1.79). The patients average age were 37.87 years old. Pulmonary tuberculosis is prevalent (67.66%) regarding to extra-pulmonary tuberculosis (32.34%). Therapeutic success, death, failure and dropped out of treatment rates were 89%, 3%, 1% and 7% respectively. Death and dropped out of treatment occur mainly during the first and second months of disease management. **Keys words:** evaluation studies,Madagascar, tuberculosis, treatment outcome,

1. INTRODUCTION

Tuberculosis is a transmissible infectious disease caused by the microorganism of the complex Mycobacterium tuberculosis or Bacillus Koch. Currently, this pathology remains a threat in the world. In fact, in 2016, there were an estimated 1.3 million TB deaths in the HIV-negative population (compared to 1.7 million in 2000), to which 374,000 deaht added into the population HIV-positive [1].

It is know that the quality of care plays an crucial role in the fight against tuberculosis, on compared to prognosis but also regarding to the spread of the disease. Under effective treatment, the contagiousness of a TB patient decreases very rapidly and most TB deaths could be prevented by early diagnosis and appropriate treatment. The treatment outcome and the prognosis of tuberculosis depends largely on this quality of management [2].

According to some authors, one of the way to assess the quality of tuberculosis management in a region or country is the analysis of the treatment outcome of patients follows up [3].

The objective of our study is to evaluate the outcome management of tuberculosis cases notified at the Diagnostis and management Center of the Fenoarivo University Hospital Center.

2. MATERIALS AND METHODS

This retrospective, descriptive study was initiated by evaluating the treatment outcome of tuberculosis patients notified at the Diagnosis and management Center of the Fenoarivo Hospital during the period from January 01, 2012 to December 31, 2016. We included in the study all Tuberculosis cases recorded in the tuberculosis register, and not transferred to another center during this study period. This study was started with the completion of a data collection form and we proceeded to fill in these files after having consulted successively the tuberculosis registers, the treatment cards and the hospitalization records of the patients. The data was entered and analyzed on the Microssoft Office Excel® 2013 software. The data were obtained with the authorization of the Director of the hospital and they were operated with the anonymity of the patients.

3. RESULTS

During the study period, we recorded 2006 cases of tuberculosis among which 95 cases (4.73%) were excluded (transferred to another center to continue their treatment). A total of 1911 files were included in the study. Figure 1 shows the annual distribution of reported TB cases between 2012 and 2016. Among these cases, 1293 cases (67.66%) were pulmonary forms and 618 cases (32.34%) were extra-pulmonary forms. For pulmonary tuberculosis, 1176 cases (90, 95%) were smear-positive pulmonary tuberculosis and 117 cases (9.05%) were smear-negative pulmonary tuberculosis (Figure 2). The average age of the patients was 37.87 years with an extreme ranging from 15 to 84 years.

There was a male predominance (36% male and 64% female) with a sex ratio of 1.79. We observed 89.01% of therapeutic success (healed and completed treatment) and 2.98% of deaths (Figure 3). The death occurs most of the time during the first month of treatment with a rate of 63.16%. The dropped out of treatment appears mainly during the 2nd month of treatment (Table I). Figure 3 shows the therapeutic regimens used in these patients according on the year. During our study, we found no statistical difference in the therapeutic outcome of the old and new treatments (Table II).

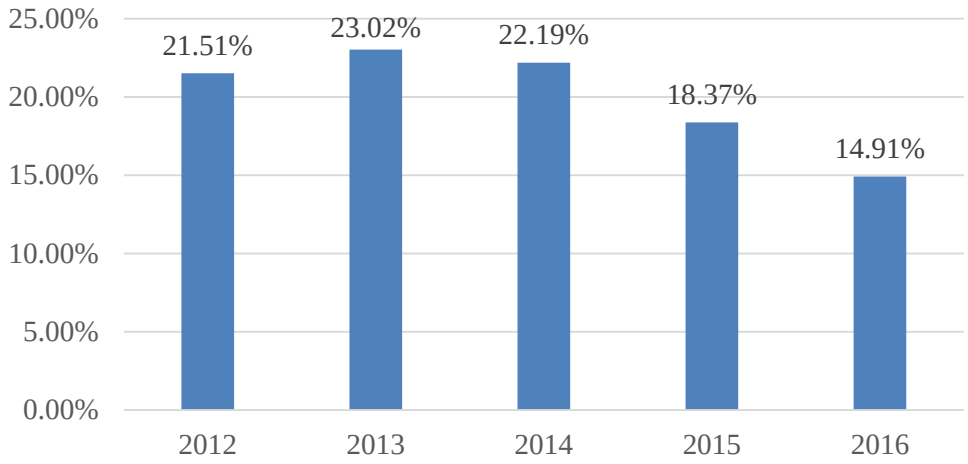
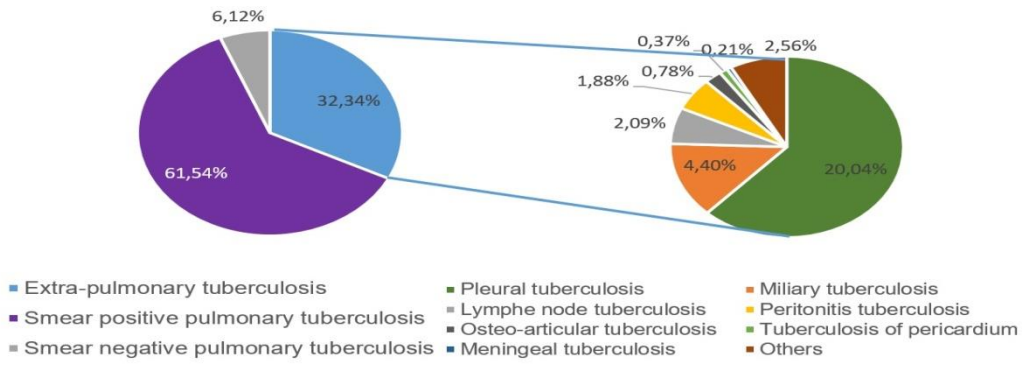


Figure 1: Annual Distribution of Tuberculosis Cases



Others: *skin tuberculosis, uro-génital tuberculosis, laryngeal tuberculosis*

Figure 2: Distribution of patients according to tuberculosis clinical forms

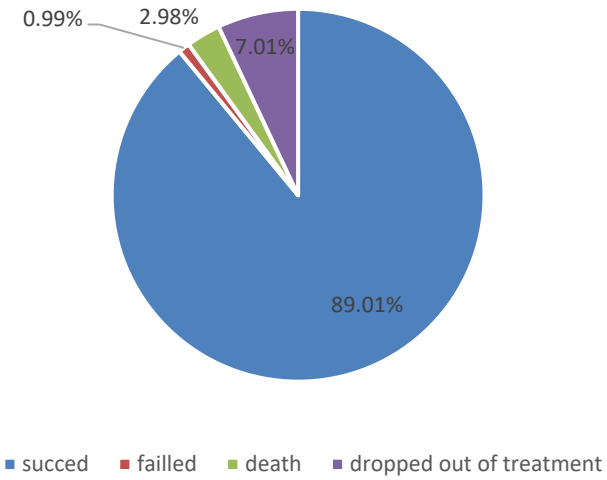


Figure 3: Treatment results in all forms

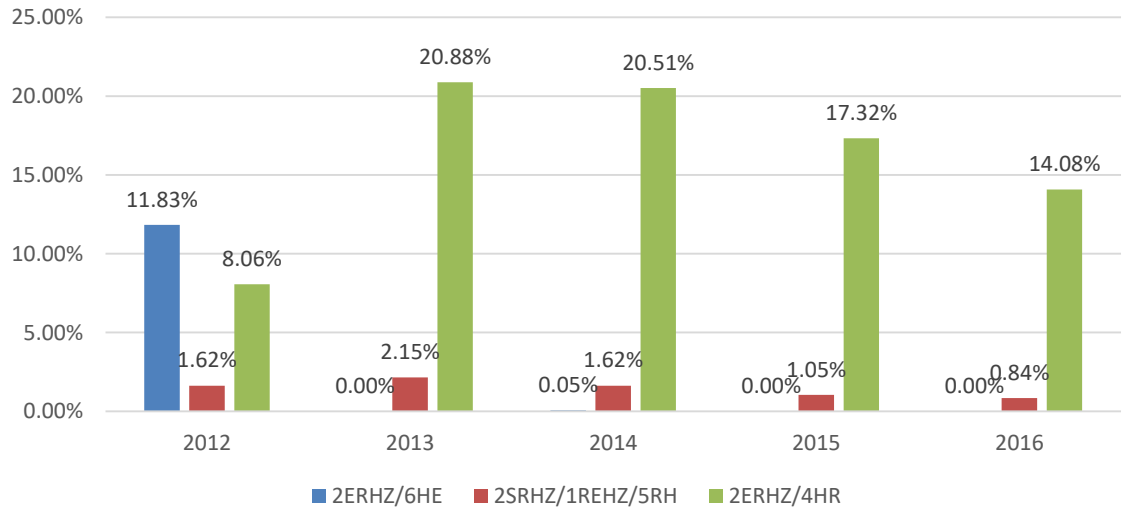


Figure 4: Therapeutic regimen used in patients by year

Table I: Distribution of patients according to period of death and dropped out of treatment

Period of death and defaulted treatment	**Dropped out of treatment n(%)**	**death n(%)**
first month	53(37,86)	36(63,16)
second month	75(53,57)	9(15,79)
third month	6(4,29)	7(12,28)
fourth month	1(0,71)	0(00)
fifth month	2(1,43)	4(7,02)
sixth month	2(1,43)	0(00)
seventh month	1(0,71)	1(1,75)

Table II : comparaison des résultats du traitement pour le traitement de 8 mois et 6 mois treatment outcome comparaison of the 8 month and 6 month treatments

Therapeutic regime		**Old treatment (2012) 2ERHZ/6HE n(%)**	**New traitement 2ERHZ/4RH n(%)**	**P**
Therapeutic success	healed	102(44,93)	682(44,14)	
	Completed treatment	91(40,01)	723(46,80)	
failed		1(0,44)	3(0,20)	0,027
deceased		7(3,08)	43(2,78)	
Dropped out of treatment		26(11,45)	94(6,08)	

4. DISCUSSION

In Madagascar, tuberculosis is still endemic despite the free treatment and efforts of the national tuberculosis control program (NTP) since 1991. The outcome knowledge of the instituted treatment constitutes a capital step of the care. Currently, tuberculosis cases reported to Fenoarivo hospital were about stable compared to a previous study in the same institution [4].

Since January 2012 to December 31, 2016, we recorded 2006 cases of tuberculosis in the diagnosis and Management center of Fenoarivo involving 1911 cases included and 95 cases excluded. There was a evident annual regression in the number of TB cases ranging from 411 to 285 for the cases assessed. This decrease may be related to a decline of tuberculosis prevalence but may be also associated to the political and economic crisis that our country has experienced during this period.

During our study, almost all forms of tuberculosis were found with a large predominance of the contagious form, i.e. smear-positive pulmonary tuberculosis. This result is comparable to the literature where the pulmonary form is the most common form of tuberculosis. A study conducted in Bamako in 2008 reported similar results with a predominance of pulmonary localization (68%) [5]. Two other studies carried out in Madagascar confirmed these results, the study of Rakotoson and al in Antananarivo reported 56.5% for the pulmonary forms and Randriatina reported 69% [6,7].

In our diagnosis and management center, the treatment success rate (89.01%) and dropped out of treatment rate (7.08%) is closed to that fixed by the NTP (treatement success rate of 87%, dopped out treatement less than 7%). this success rate was lower than that found by Auregan at the Soavinandriana military hospital in Madagascar (67.2%) in 1993 [8].

In addition, we found that death and dropped out of treatment occurred mainly during the first and second months of treatment. This death may be related to the severity of tuberculosis or the occurrence of severe sequelae such as acute or chronic respiratory failure. On the other hand, dropped out of the treatment during this period may be due to the feeling of healing felt by the patients after 2 months of treatment. Moreover, as the patient has to come to the health center every day to take the drugs (DOT strategy), it can interfere a lot on his work from where the patient prefer to give up their treatment.

Regarding treatment, Madagascar had been on a 6-month treatment since the year 2012 combining 2 months (attack phase) directly observed treatment (DOT) with rifampicin, isoniazid, ethambutol, pyrazinamide, followed by 4 months (maintenance phase) of rifampicin and isoniazid. Patients recruited in 2012 were still on an 8-month treatment regimen. There was no statistically significant difference among the treatment outcome for the 8 month (long duration treatment) and the 6 month treatment, hence the benefit of using short treatment.

In light of our study, to improve this treatment outcome, we suggest:

- to insist on the education and information of the patients on the modality and duration of tuberculosis treatment as well as the expected benefits of the treatment on itself and the society.

- to enhace the doctor-patient relationship because the user-friendliness of health workers increases patient confidence and thus reduces the number of patients lost.

5. CONCLUSION

This work has show the treatment results of tuberculosis notified at the Diagnosis and Management Center of the University Hospital of Fenoarivo. We achieved the goal of the

National Program for the Control of Tuberculosis in Madagascar, which is to reach a success rate of 87% in 2019 among the new cases detected and decrease the rate of discontinuation of TB treatment to less than 7%. Efforts still need to be made to improve this result and for this reason, the strict application of the guidelines set by the National Tuberculosis Program is necessary to ensure the effectiveness of the fight against tuberculosis.

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