Mycobacterium tuberculosis and anti-tuberculosis drug resistance in HIV negative and HIV positive cases in Jos, Nigeria.

By

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INTRODUCTION

- Tuberculosis (TB) continues to pose health challenges globally with 95% of estimated incident cases found in developing countries.

- Nigeria has an incident rate of 108 per 100, 000 population ranking among the top TB burdened countries in Africa. (WHO, 2011)

- The challenges of drug resistance in *Mycobacterium tuberculosis* (MTB) and its co infection with HIV/AIDS favour the rising trend and complications of TB in most resource limited countries.

- A rapid molecular method was used to study the prevalence of MTB and its susceptibility/resistance to isoniazid (INH) and rifampicin (RIF) in Jos, Nigeria.

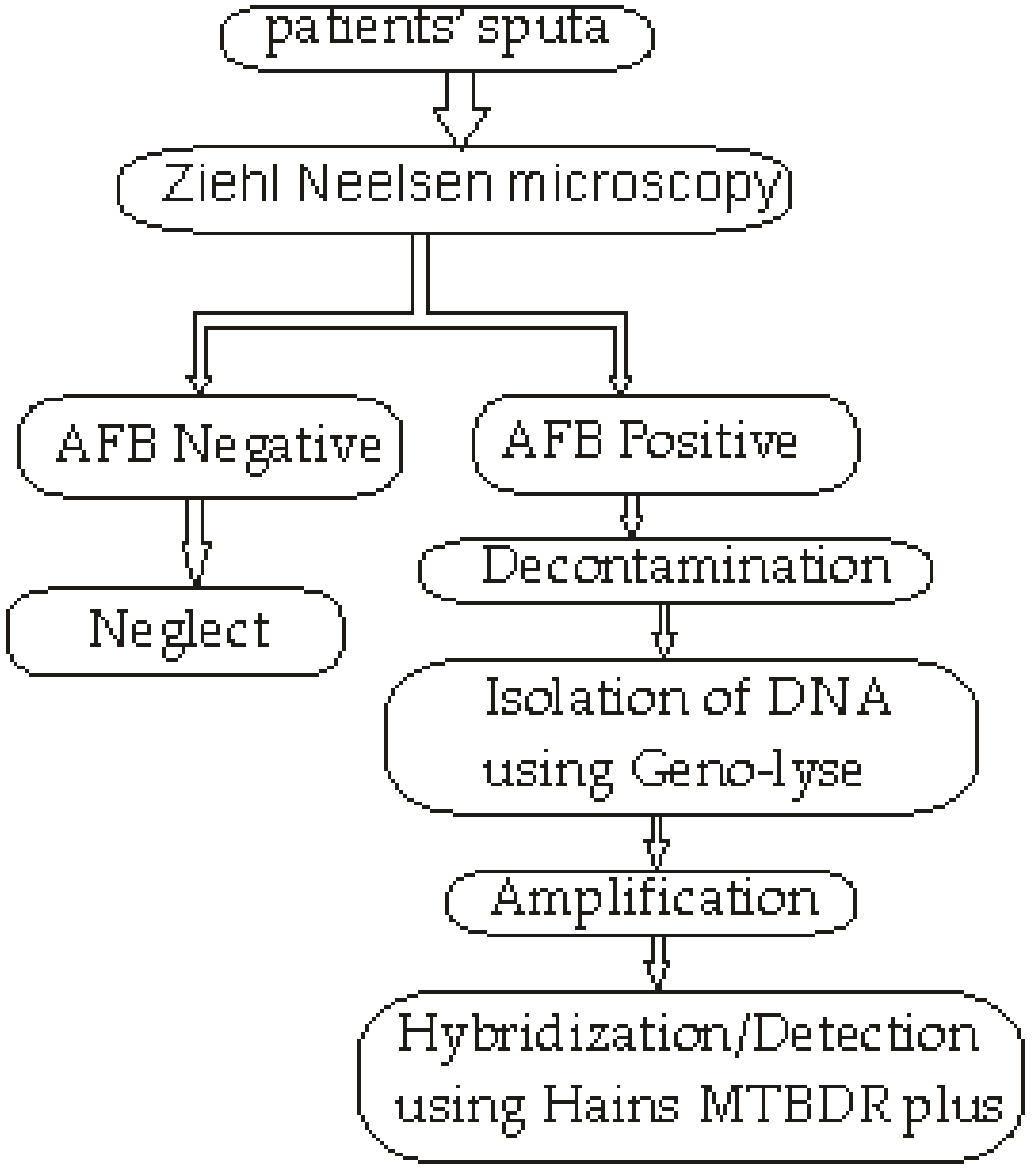
METHOD

- A total of 90 AFB positive sputum specimens from 42/90 TB+HIV- and 27/90 TB+HIV+ patients received at three different DOT centres in Jos, Nigeria.

- The samples were tested by Genotype MTBDR*plus* for MTB and its susceptibility to INH and RIF.

- Tests were performed according to specified standard methods.

Laboratory Procedure/Diagnostic Technique



RESULTS

Table 1: Age and Sex distribution of AFB smear positive cases tested for Genotype MTBDR*plus* in Jos (N=90).

Age Group (years)	Male	Female	Total no. of cases	
			MTBDRplus positive	AFBSm positive
≤ 10	0	1	1	1
11 – 20	2	0	2	2
21 – 30	13	7	20	22
31 – 40	23	11	34	37
41 – 50	10	5	15	17
51 – 60	9	1	10	10
> 60	1	0	1	1
Total	58	25	83	90

RESULTS

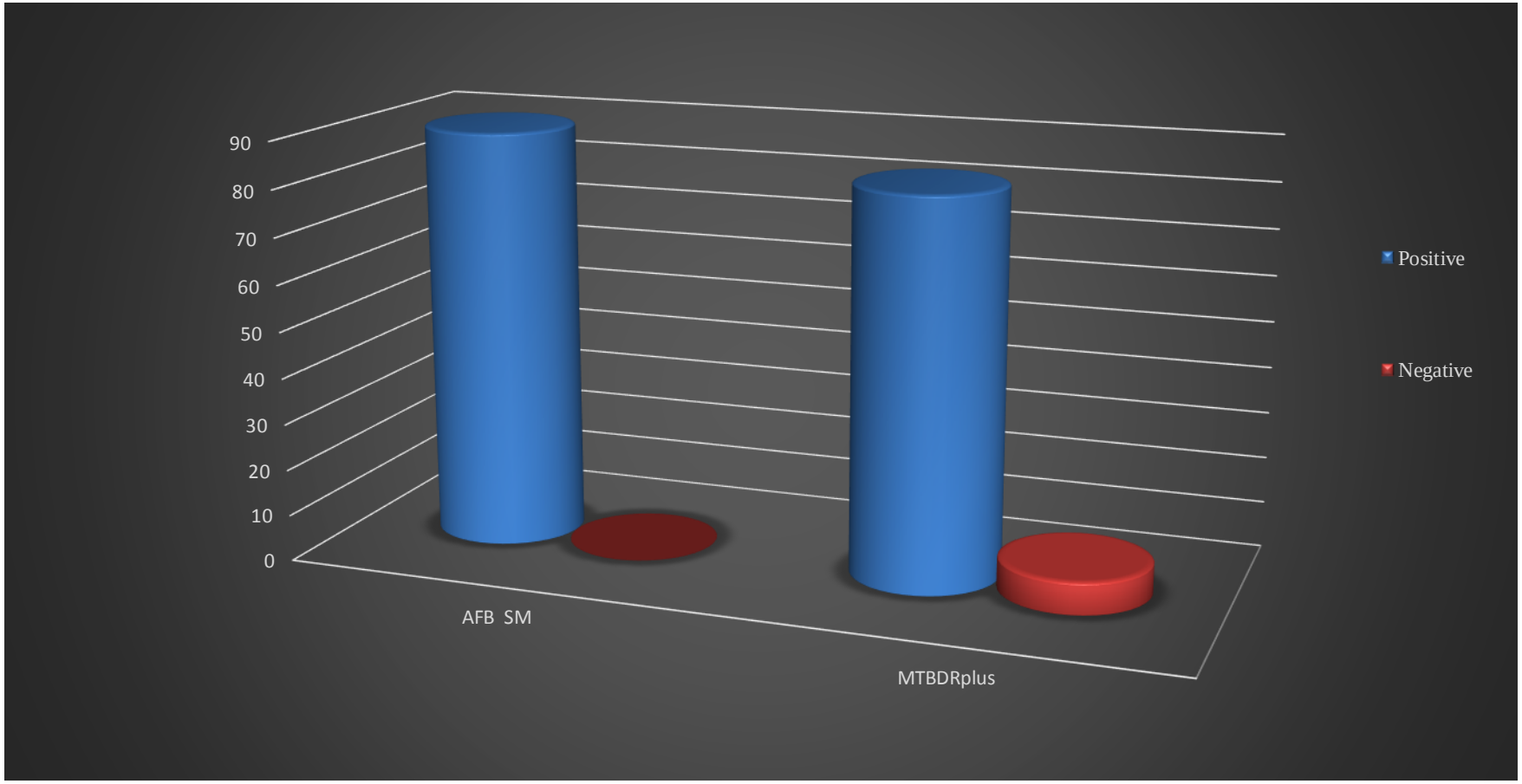


Fig 1: Comparisons of AFB smear positivity and *M. tuberculosis* detection by Genotype MTBDR*plus* (N=90)

RESULTS

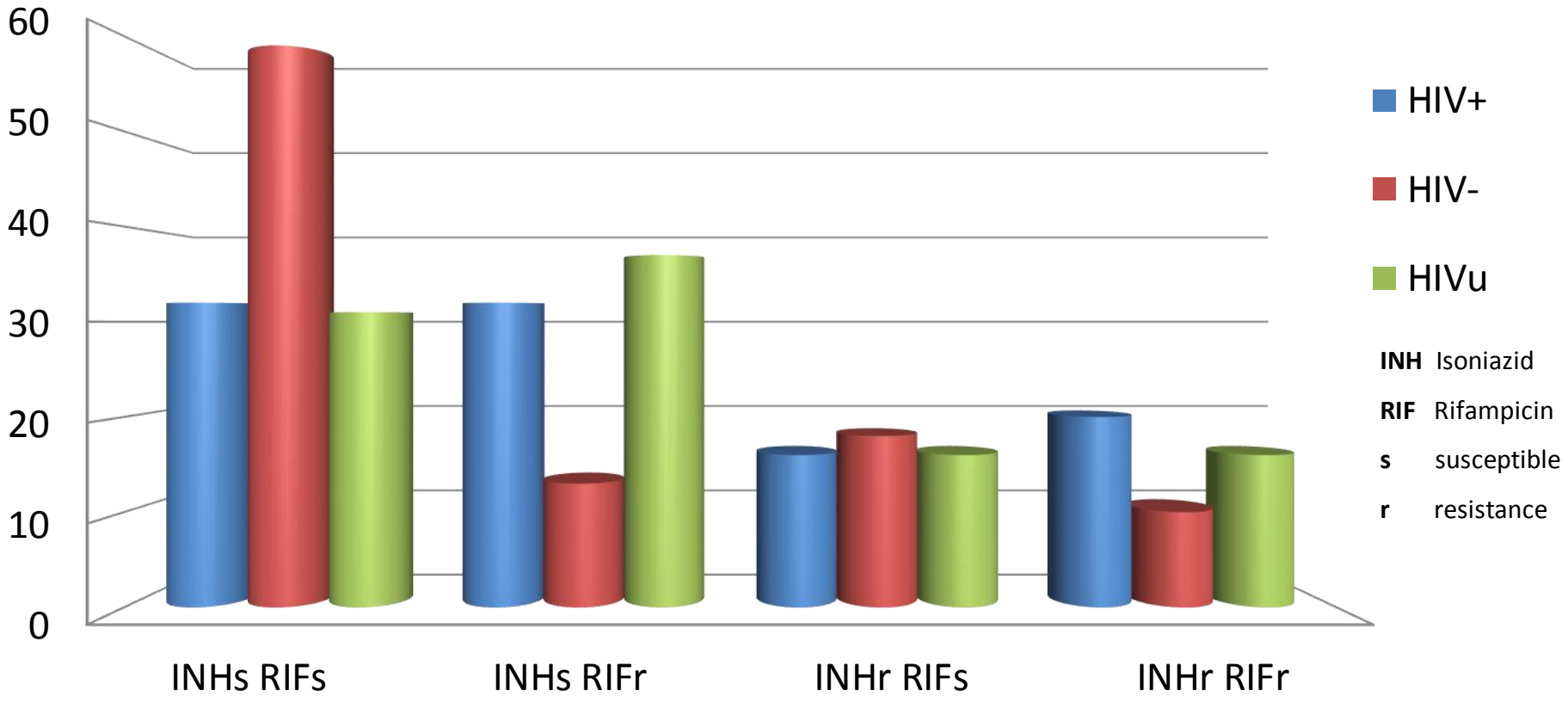


Fig 2: Susceptibility profile of MTB in HIV positive and HIV negative TB suspect cases by MTBDR*plus* (N%).

RESULTS

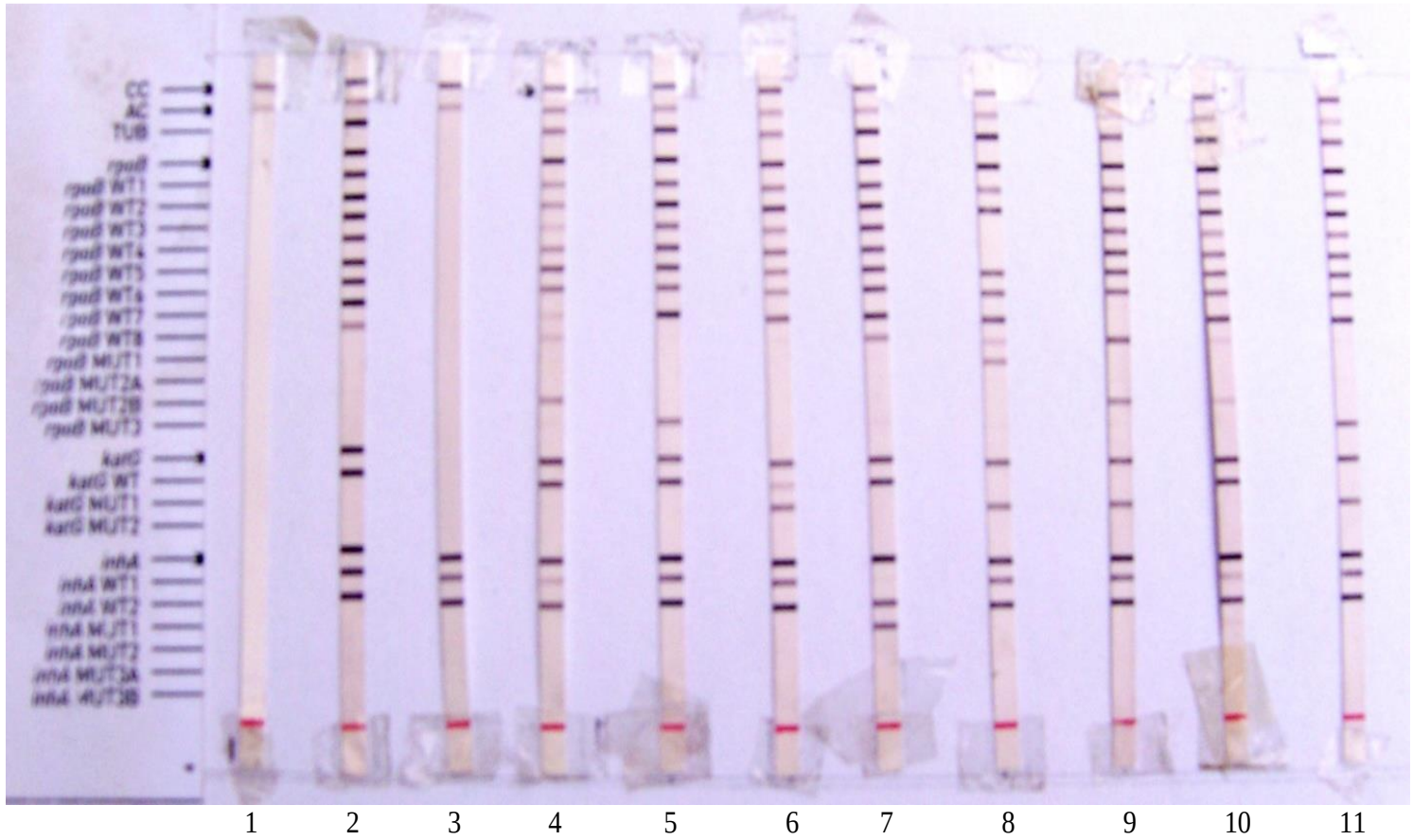


Fig. 3: Membrane strips showing susceptibility profiles of some MTB positive cases by MTBDRplus.

RESULTS

- Eighty three of the 90 (92%) total number of the specimens were positive while 7/90 (8%) were negative by MTBDR*plus*.

- Thirty seven of 83 (45%) MTB positive cases were pan susceptible to INH and RIF.

- Single-resistance was observed in a total of 34/83 (41%) comprising of; RIF 20/83(24%), INH 14/83 (17%) and multi-resistance to RIF plus INH (MDR) in 12/83 (14%) cases.

DISCUSSION

- Smear microscopy by the Zeihl Neelsen method is the most frequently used method for laboratory diagnosis of TB in Nigeria and most other countries in the developing world.

- Our results showed that 83 (92%) out of 90 AFB smear positive cases tested positive by Genotype MTBDR*plus* assay while 7 (8%) were negative.

- The seven undetectable cases by GenoType MTBDR*plus* could be Non-tuberculous Mycobacteria (NTM) or other non tuberculosis mycobacterial AFB such as Nocardia species which can cause pulmonary disease resembling tuberculosis.

- Inclusion of improved diagnostic methods of TB diagnosis in the national algorithm is necessary in order to prevent unguided use of anti tuberculous drugs especially in cases of non mycobacterial AFB.

DISCUSSION

- Out of the 90 total samples collected, single resistance was higher for rifampicin 20/83 (24%) than isoniazid 14/83 (17%).
- This is contrary to some reports which have shown that mono-resistance to rifampicin is rare while that of isoniazid was common (Somoskovi et al, 2001).
- 32% of RIF mono-resistance in HIV patients against 13% in HIV negative patients
- Combined treatment with anti-retroviral and anti-tuberculosis drugs may influence MTB drug susceptibility in the patients.
- A nationwide surveillance study on drug susceptibility test (DST) is necessary

CONCLUSION

- Resistance to anti-TB drugs occurred in both TB/HIV negative and TB/HIV co-infected patients.
- The high rate of MDR cases (14%) and may not be a true representation of the MDR cases in Jos as most of the samples were referral cases.
- The high rate of RIF single resistance (24%) is likely due to combined effect of treatment with anti TB and ARV in HIV positive patients.
- The use of improved diagnostic methods for the early detection of TB drug resistance would enhance prompt and precise treatment of TB patients especially those co-infected with HIV.

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THANK YOU

FOR

LISTENING