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PREVALENCE OF TB/HIV CO-INFECTION AMONG PATIENTS ATTENDING MUHIMA HOSPITAL

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Abstract

The biological link between the human immunodeficiency virus (HIV) acquired immune deficiency syndrome (AIDS) and tuberculosis (TB) has been evident for some years; HIV is fueling the TB epidemic around the world, and the tuberculosis is the leading cause of death in people living with HIV, thus the integration of HIV and TB in diagnosis, treatment and prevention should increase patient care, thus we have conducted a study on the prevalence of TB/HIV co- infection among patients attending TB service in Muhima Hospital from January to August 2016 in order to assess if the prevalence of TB/HIV co-infection would be high among the patients attending TB service at Muhima District Hospital. The study populations were the patients suspected for TB attending TB service at Muhima hospital and we found that the prevalence of HIV among the patients suspected of TB equals to 24.9%. Even if this prevalence seems to be high compared to the normal population, those patients are exposed patients. According to the TB status, the prevalence of TB among the patients suspected of TB equals to 26.60%. Even if this prevalence seems to be high compared to the normal population, those patients are exposed patients regarding that Muhima hospital is surrounded by the catchment area of vulnerable population like Nyabugogo. The analysis of immunological profile of those suspected patients have been done by measuring CD_4 count and the analysis of correlation between TB a been done using coefficient of correlation r where it has showed that there is a significance negative correlation between the number of CD_4 and tuberculosis. This may be explained that if the immunological profile is reduced, the individuals are exposed to opportunistic disease like tuberculosis. The analysis of correlation between TB and HIV co-infection has been done using coefficient of correlation r where it has showed that there is a significance positive correlation between the number of CD_4 and tuberculosis with r= .471 with $p>0.05$. We found also that the prevalence of co-infected patients equal to 15.6%, the HIV positive to 9%, the TB positive to 10%. As conclusion the integration of HIV/TB have to be done for proper care of the patients.

Keyword: Prevalence, HIV/TB, Patients Muhima, Hospital

INTRODUCTION

Tuberculosis is a common and often deadly infection disease caused by various strains of Mycobacteria, usually *Mycobacterium tuberculosis* in humans. It attacks the lungs but can also affect other parts of the body such as kidney and bones. It is the leading infection where it causes death worldwide, being responsible for 3 million of death per year.

The importance of tuberculosis as a global public health concern has been emphasized by the high incidence rates and the recent outbreaks of multidrug resistant tuberculosis, particularly in HIV positive individuals (KOCHI 2011).

The Human Immunodeficiency Virus, known as HIV also causes AIDS and this is a major problems of public health in the world where at the end of 2012 , about 40 million of people worldwide were living with HIV / AIDS (UNAIDS, 2012) and 70 % of all infected were in Africa.

TB and HIV co-infection is a major public health problem in many parts of the world where the prevalence of HIV among TB patients worldwide is 10 0/0. (WHO 2015).

In Africa 33% of all people living with HIV are co□infected with both TB and in Rwanda, it is estimated that the prevalence of HIV among TB patients is estimated to 20% (RBC 2015).

Tuberculosis and HIV together are responsible for the deaths of over 4 million people annually and TB is one of the most common infections that threaten people living with HIV in the developing country.

It is estimated that up to 33% of all AIDS deaths worldwide can be directly attributed to TB and HIV testing and counseling for patients with TB offers an entry point for care and treatment of prevention of HIV infection and MDRTB. (CDC, 2015).

Promoting linkages between tuberculosis (TB) and Human Immunodeficiency Virus during diagnosis, treatment and prevention programs in resource constrained environments where both diseases are prevalent is essential to improve the diagnosis, treatment, and outcomes for patients affected by both diseases.(CDC,2015).

It is in this context that we have conducted the study on the Prevalence of TB/HIV co-infection among patients attending TB services in MUHIMA Hospital.

Research question

The prevalence of TB/HIV co-infection would be high among the patients attending TB service at Muhima District Hospital?

Main objective

Todetermine the prevalence of TB infection among the patients attending TB service at Muhima District Hospital.

Specific objectives

- To calculate the proportion of patients with TB/HIV confection among the patients attending TB service at Muhima District Hospital.
- To count the number of CD4 of patients with HIV/TB infection

METHODOLOGY

Research design

This was a cross section study whose aim was to determine the Prevalence of TB/HIV co-infection among patients attending TB service in Muhima Hospital from January to August 2016.

Target population

Those are patients who have been suspected of tuberculosis infection at Muhima hospital in the period from January to August 2016.

Sampling techniques

To select the elementsto be included in our sample; we used systematic sampling where the first element to be included has been selected randomly. It is the first patient who has been suspected to have tuberculosis in January, and we put the interval of four persons up to the reach of the sample size. Every patient suspected of tuberculosis has been tested with also HIV.

Data collection

The data have been collected in TB service at Muhima District using pre – established tools and every patient has to fill the consent form. Every patient has provided 3 samples of sputum for testing of tuberculosis and one blood sample for HIV testing. For positive patients either on HIV or TB, the CD_4count has been performed in order to assess immunological profile of infected patients. The statistics methods have allowed us to present and to analyze the results.

RESULTS AND DISCUSSION

Presentation, Analysis and Interpretation of Data

This part presents the data from our participants. It present the patients according to their age groups, sex, HIV and TB status, and the correlation between HIV, TB and CD_4 count.

Table 1: Presentation of the participants according to the HIV status

HIV status	Frequency	Percent
Negative	130	75.1
Positive	43	24.9
Total	173	100.0

According to the HIV status, the prevalence of HIV among the patients suspected of TB equals to 43(24.9%) while participant with negative on HIV were 130 (75.1%).

Table 2: **Presentation of the participants according to the TB status**

TB status	Frequency	Percent
Negative	127	73.4
Positive	46	26.6
Total	173	100.0

According to the TB status, the prevalence of TB among the participants suspected of TB equals to 46 (26.6%). Even if this prevalence seems to be high compared to the normal

population, those patients are exposed patients regarding that Muhima hospital is surrounded by the catchment area of vulnerable population?

Table 3: Determination of co-infection between HIV and TB prevalence
This table determines the co-infection between HIV and TB

HIV status		TB status		
		Negative	Positive	Total
HIV status of patients	Negative	111	19	130
	Positive	16	27	43
Total		127	46	173

The table 3 shows that the co-infected patients between TB and HIV are 27 patients which represent 15.6%the patients.

Table IV: Analysis of correlation between TB and HIV co-infection

		HIV status of patients	TB status of patients
HIV status of patients	Pearson Correlation	1	.471**
	Sig. (2-tailed)		.000
	N	173	173
TB status of patients	Pearson Correlation	.471**	1
	Sig. (2-tailed)	.000	
	N	173	173

The analysis of correlation between TB and HIV co-infection has been done using coefficient of correlation r where it has showed that there is a significance positive correlation between HIV positive and tuberculosis. This means that positive patients with HIV increase risk of developing TB with correlation coefficient equal to o.471 and $p<0.05$.s

Table V: Analysis of correlation between co-infected HIV/TB and the proportion of CD_4

TB and CD_4		TB/HIV status of patients	Number of CD4 of the patients
TB status of patients	Pearson Correlation	1	-.693**
	Sig. (2-tailed)		.000
	N	173	173
Number of CD4 of patient	Pearson Correlation	-.693**	1
	Sig. (2-tailed)	.000	
	N	173	173
**. Correlation is significant at the 0.05level (2-tailed).			

The analysis of correlation between HIV /TB co-infection and the number of CD_4 have been done using coefficient of correlation r where it has showed that there is a significance negative correlation between the numbers of CD_4 and tuberculosis. This means that the number CD_4 are reduced for the patients with tuberculosis with r= - .693 with p>o.05

Table 4: Presentation of the patient according to the sex

Sex	Frequency	Percent
Male	89	51.4
Female	84	48.6
Total	173	100.0

According to the sex, we found that men are more suspected to have TB than women with the percentage of 51.4 0\0

Results discussion and analysis

The biological link between the human immunodeficiency virus (HIV) acquired immune deficiency syndrome (AIDS) and tuberculosis (TB) has been evident for some years; HIV is fueling the TB epidemic around the world, and the tuberculosis is the leading cause of death in people living with HIV(WHO, 2015) and the integration of HIV and TB in diagnosis, treatment and prevention should increase patient care, thus we have conducted a study on the prevalence of TB/HIV co- infection among patients attending TB service in Muhima Hospital in order to assess if the prevalence of TB/HIV co-infection would be high among the patients attending TB service at Muhima District Hospital.

In our study, we found that the men are more suspected to have TB than women with the percentage of 51.4%and this is may due to that men are more exposed to the risk factors than women as smoking. Those results are not far from the results of RBC on the prevalence of TB where they found that men are more exposed that the women. (RBC report 2015).

According to the HIV status, the prevalence of HIV among the patients suspected of TB equals to 24.9%. Even if this prevalence seems to be high compared to the normal population, those patients are exposed patients and this report also is in agreement of the report from RBC on the prevalence of HIV among the suspected of TB (RBC 2015).

According to the TB status, the prevalence of TB among the patients suspected of TB service equals to 26.6%. Even if this prevalence seems to be high compared to the normal population, those patients are exposed patients regarding that Muhima hospital is surrounded by the Catchmentarea of vulnerable population like Nyabugogo and those results are not far from the results conducted in Nigeria on the prevalence of TB among the exposed population where they found that the prevalence is 26.6% (Girardi E *etal*).

The analysis of immunological profile of those suspected patients have been done by measuring CD_4 count and the analysis of correlation between TB was done using coefficient of correlation r where it has showed that there is a significance negative correlation between the number of CD_4 and tuberculosis. This means that the number CD_4 are reduced for the patients with tuberculosis with r= - .693 with p>o.05. Those results are similar to the results obtained in Ethiopia on the prevalence of pulmonary tuberculosis and immunological profile of HIV co-infected patient where they found that the immunology is reduced among those patients (Yitayih Wondimeneh *et al 2013).* This may be explained that if the immunological profile is reduced, the individuals are exposed to opportunistic disease like tuberculosis.

The analysis of correlation between TB and HIV co-infection has been done using coefficient of correlation r where it has showed that there is a significance positive correlation between the number of CD_4 and tuberculosis with r= .471 with $p<0.05$.

We found also that the prevalence of co-infected patients equal to 15.6%.

CONCLUSION

Even if number of death due to HIV infection has been reduced due to the expansion of ART in all needed patients in Rwanda; however without a collaborative response to the HIV and TB co-infection epidemic, the survival gains made through expanded access to ART may be compromised.

In all settings, the old method where patients who have to take the anti TB and who receive a diagnosis of HIV infection obtain their anti TB treatment in TB clinic and is referred to HIV clinic for HIV care completion have to be changed for proper care of the patients.

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