

Demographic Presentation of Diabetes Mellitus among Active Pulmonary Tuberculosis Attending Alshifaa Hospital for Infections and Chest Diseases in Mosul, Iraq

Dr. Salih Mohammed Sabri MB.CH.B DM¹, Dr. Salih Sulaiman Mahmood MB.CH.B DM², Dr. Elias Ahmed Hussein MB.CH.B DM³

¹D.M. Respiratory Medicine ALShifaa Hospital Mosul, Iraq

²D.M. Medicine Alshifaa Hospital, Mosul-Iraq

³D.M. Medicine Alshifaa Hospital, Mosul-Iraq

ABSTRACT

Background: The association between diabetes mellitus and tuberculosis is well documented and there is substantial evidence to support the fact that diabetes is an important risk factor for tuberculosis and conversely it is also possible that tuberculosis can induce glucose intolerance and also deteriorate glycemic control in subjects with diabetes.

Objective: To determine the percentage of diabetes mellitus (type I and type II) among active pulmonary tuberculosis attending AL-Shifaa hospital for infections and chest diseases in Mosul, Iraq.

Patients and Method: A retrospective data collected through reviewing files of patients with active pulmonary tuberculosis treated in Al-Shifaa hospital over nine years (2004-2013). There were 620 patients (373 male and 247 female) diagnosed as active pulmonary tuberculosis depending mainly on chest x-ray and sputum examination ,we recorded the number of diabetes mellitus patients (both type I and type II) among them.

Results: Out of 620 patients with active pulmonary tuberculosis 133 patients (21.4%) were found to have diabetes mellitus, The percentage of type II diabetes was higher (63.9%) than type I (36%).Also the study showed that the percentage of pulmonary tuberculosis among male sex was higher (60.1%) than female sex (39.8%). and the percentage of patients having both tuberculosis and diabetes mellitus also was higher in male sex (58.64%) than female sex (41.35%).

Conclusion: There was high percentage of diabetes mellitus (meanly type II) among patients with active pulmonary tuberculosis. Male patients with active pulmonary tuberculosis are higher than females.

Keywords: - Diabetes mellitus (DM) –Tuberculosis (TB) -Glucose intolerance (GI)

INTRODUCTION

Tuberculosis remains a major public health problem , It causes ill health problem among millions of people each year and ranks as the second leading causes of death from an infectious diseases worldwide⁽¹⁾.

Diabetes mellitus is an iceberg disease with increasing prevalence in both developed and developing countries, International Diabetic Federation estimated that there are 382 million people worldwide living with diabetes⁽²⁾.

The association between diabetes mellitus and tuberculosis is well documented and there is substantial evidence to support the fact that diabetes is an important risk factor for tuberculosis⁽³⁾ and conversely it is also possible that tuberculosis can induced glucose intolerance and also deteriorate glycemic control in subject with diabetes (4)About 95 % of patient with tuberculosis and 70% of diabetic patient live in low and middle income countries^{(5), (6)} The epidemic growth of diabetes mellitus occurred in developing countries where tuberculosis is highly endemic, as a result diabetes mellitus and tuberculosis are increasingly present together⁽⁷⁾.

Systematic reviews have shown scientific evidence of the linkages between two diseases, diabetes mellitus and tuberculosis may complicate each other at many levels. Among those with active tuberculosis diabetes may adversely affect tuberculosis treatment outcomes by delaying the time for microbiological response, reducing the likelihood of favorable outcome and increases the risk of relapse, death and drug resistance ^{(8),(9)}

PATIENTS AND METHODS

A retrospective study. Data collected through reviewing the files of patients with active pulmonary tuberculosis treated in Al Shifaa hospital for infectious and chest diseased in Mosul city, Iraq over a nine years (2004 -2013) to determine the percentage of patients with diabetes mellitus (both type I and type II) among patients with active pulmonary tuberculosis. There were 620 patients (373 male and 247 female) were diagnosed as active pulmonary tuberculosis depending mainly on chest x –ray and sputum examination ,we recorded the number of diabetes mellitus patients (both type I and type II) among them.

RESULTS

Out of 620 patients with pulmonary tuberculosis 133 (21.45 %) were found to have diabetes mellitus , the percentage of type II was higher (63.9%) than type I (36.09%). Also the study shows that the percentage of pulmonary tuberculosis among male sex was higher (60.16%) than female sex (39.83%),and the percentage of patients having both tuberculosis and diabetes mellitus also was higher in male sex (58.64%) than female sex .

Table1: Percentage of diabetes mellitus among all Tuberculous patients

NO. of Tuberculous patients (Total)	No. of Diabetic patient (Total)	Percentage
620	133	21.45 %

Table 2: Percentage of male and female among all Tuberculous patients

Number of diabetic patient (Total)	Type	Number	Percentage
133	Type II	85	63.90%
	Type I	48	36.09%

Table 3: Percentage of Type I and II among all diabetic patient

Number of patients having both tuberculosis and diabetes	Sex	Number	percentage
133	Male	78	58.64%
	Female	55	41.35%

Table 4: Percentage of male and female among all patients diabetic

Number of Tuberculous patients(Total)	Sex	Number	Percentage
620	male	373	60.16%
620	female	247	39.83%

DISCUSSION

Due to the parallel epidemics of tuberculosis and diabetes mellitus in 2011 the world health organization (WHO) made the recommendation that tuberculosis surveillances should be performed among patients with diabetes mellitus in setting where the tuberculosis incidence was more than 100 cases /100000 inhabitant. They recommended testing for diabetes mellitus among tuberculosis patients in all countries .In present study the percentage of the diabetes mellitus among active pulmonary tuberculosis was high (21.4%) ,similar result were in a study done by Bhupendra Kumra et al ⁽¹¹⁾ in tertiary care hospital in central India where prevalence was (32.2%) and in Rughuramans et al ⁽¹²⁾ study done in Pondicherry the prevalence of diabetes mellitus in TB patients was found to be 29% in contrast to the above finding, another study done in Nigeria by Oliyanka et al⁽¹³⁾ found the prevalence to be 5.7% which could be attributed to difference in demographic characteristics .

This study also show that the number and percentage of pulmonary tuberculosis is higher in males than females, the reasons for males been more affected with tuberculosis than females were not known. The greater morbidity of males could possibly lead to getting higher infection by coming in contact with patients with pulmonary tuberculosis and / or the males were more prone to infection of this disease. Similar results were in study done by Abdul Qayyum Khan in Arba Minch town of south Ethiopia ⁽¹⁴⁾

CONCLUSIONS

There is a high percentage of diabetes mellitus (mainly type 2) among patients with active pulmonary Tuberculosis. The study also shows that the number and percentage of pulmonary Tuberculosis in general is higher in males than females.

RECOMMENDATIONS

- 1- Screening for tuberculosis in patients with diabetes mellitus and screening of diabetes mellitus in patients with tuberculosis should be considered particularly in setting with high tuberculosis prevalence.
- 2- Management of diabetes mellitus in patient who have also tuberculosis should be aggressive. Insulin should be initiated at the outset using modern insulin analogous, oral hypoglycemic agents should not be used in sever tuberculous patients but may be used with caution once the disease has settled.

REFERENCES

- [1]. World Gilpin, Christopher, et al. "The World Health Organization standards for tuberculosis care and management.", 2018: 1800098.
- [2]. International Diabetes Federation (IDF) diabetes atlas, 6th edition 2013.
- [3]. Jean CY, Murry MB"diabetes mellitus increase the risk of active tuberculosis, "A systematic review of 13 observational studies". , 2008, Plos Med 5 : e 152.
- [4]. Dooley KE chaisson RE, tuberculosis and diabetes mellitus ; "convergence of two epidemics". Lancet infec Dis. 2009, 9(12) : 737-746.
- [5]. Harries, Anthony D et al. "Defining the research agenda to reduce the joint burden of disease from diabetes mellitus and tuberculosis." Tropical medicine & international health : TM & IH vol. 15,6 (2010): 659-63. doi:10.1111/j.1365-3156.2010.02523.x
- [6]. SenT, Joshi SR, udwadia ZF. Tuberculosis and diabetes mellitus merging epidemics.JAssoc. physicians India 2009 ;57: 399-404.
- [7]. Ruslami R, Aarnoutse RE, Alisjahbana B, van der Ven AJ, Van Crevel R: Implications of the global increase of diabetes for tuberculosis control and patient care. Trop Med Int Health 2010,15(11):1289–1299.
- [8]. World Health Organization & International Union against Tuberculosis and Lung Disease. (2011). Collaborative framework for care and control of tuberculosis and diabetes. World Health Organization. <https://apps.who.int/iris/handle/10665/44698>
- [9]. Jeon CY, Murray MB. Diabetes mellitus increases the risk of active tuberculosis: a systematic review of 13 observational studies. PLoS Med. 2008;5:e152
- [10]. World Health Organization (2011) Collaborative framework for care and control of tuberculosis and diabetes. WHO/HTM/TB/2011.15 WHO/HTM/TB/2011.15
- [11]. Sasmita, Hasri Yulia, Irma Prasetyowati, and Pudjo Wahjudi. "Prevalence and Risk Factors of Diabetes Mellitus in Tuberculosis Patient at Patrang District Indonesia." Indonesian Journal of Tropical and Infectious Disease 7.4 (2019): 79-85.
- [12]. Raghuraman S, Va. Sude Van KP, Govindarajan S, chinnakali P, Panigrahi Kc. Prevalence of diabetes mellitus among tuberculosis patients in urban pudusherry North Am J. Med Sci 2014 . 6 :30-4.
- [13]. Olayinka AO, Anthonia O, Yetunde K. prevalence diabetes mellitus in persons with tuberculosis in atertiary health centre in lagos, Nigeria Indian J Endocr Metab 2013;17:486-9.
- [14]. Abdul Qarry Khan, Aman Wako, Belaynesn Ayalew, Medhanint Tefera and Yeworkwuha tadeses 2013, Prevalence of Tuberculosis in males and female in araba Minch Town of south Ethiopia, Journal of medical science, 13:396-400.