Opinion

Iraqi tuberculosis (2003-2017): an silent hindrance infection

Abstract

Tuberculosis (TB) is a common infection and public health problem attacking developing countries or those whose undergo food and drug depleting crisis. Tuberculosis regard important killer among top ten infectious agents and the mortality compile 10% of new registered cases among Asia and Africa. The socio-environmental factors play a vivid role in mass transfer of TB includes: low-ventilation, darkness, wetness and crowdedness. Tuberculosis is a public health priority in Iraq. Iraq regard one of the region of high burden of TB, and accounts for 3% of the total number of cases. There are a predictable 20 000 TB patients in Iraq with death rate of 20% annually. Iraq is one of the six countries (Egypt, Indonesia, Yemen , Netherland and UK) whose compile 9% of total incidence of TB worldwide. The results show high incidence, prevalence and mortality of TB-infected patients in years 2003 and 2004 and this can be interpreted due to bad and high shortage of health service in Iraq directly after 2003 invasion war by US army while years after 2004 (2005-2017) show decrease in incidence, prevalence and mortality. Concern the age groups of patients with TB, it seem the 25-34 years and 15-24 years were most common for male and female respectively. The current review conclude that, decreasing in incidence, prevalence and mortality for last 7 years due to application of national and international health polices of TB in Iraq.

Keywords: *mycobacterium tuberculosis*, public health, Iraq, infections, mortality, socio-environmental factors

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Tuberculosis

Tuberculosis (TB) is a common infection and public health problem attacking developing countries or those whose undergo food and drug depleting crisis.[1] It caused by Mycobacterium tuberculosis complex which transmitted intrapersonal by inhalation of coughed of spilled droplets. Infection also transmitted within and between livestock and wildlife populations, thus obstructing TB control. Indirect transmission might be enabled if MTC bacteria persist in the environment long enough to represent a risk of exposure to different species sharing the same habitat.[2,3] Following domestication, humans were able to transmit the disease to animals and M. bovis emerged as a pathogen of domesticated and wild animals. The socio-environmental factors play a vivid role in mass transfer of TB includes: low-ventilation, darkness, wetness and crowdedness.[4,5] Tuberculosis regard important killer among top ten infectious agent and the mortality compile 10% of new registered cases among Asia and Africa.[6,7] Infection with M. tuberculosis result in either clinically asymptomatic, contained state that is termed latent TB infection (LTBI) or a smaller subset of infected individuals present with symptomatic, active TB.[8]

Mycobacterium tuberculosis

Mycobacterium tuberculosis is part of a complex that has at least 9 members: *M. tuberculosis sensu stricto, M. africanum, M. canetti, M. bovis, M. caprae, M. microti, M. pinnipedii, M. mungi, and M. orygis*. It requires oxygen to grow, does not produce spores, and is non-motile. M. tuberculosis divides every 15–20 hours. This is extremely slow compared with other bacteria, which tend to have division times measured in minutes (*Escherichia coli* can divide roughly every 20minutes). It is a small bacillus that can withstand weak disinfectants and can survive in a dry state for weeks. Its unusual cell wall is rich in lipids such as mycolic acid and is likely responsible for its resistance to desiccation and is a key virulence factor.[9–11] Concern the virulence factors, MTC have five type 7 secretion systems (ESX1-5) The best characterized of these is ESX1 which is required for the full virulence of Mtb, which uses this secretion system to translocate from the phagosome into the cytosol of infected macrophages where it may persist in a protected environment.[12–18] ESX3 is involved in the acquisition of iron and zinc by Mtb and is essential for growth also in culture. ESX5 is found only in MTBC, *M. marinum* and *M. ulcerans* and it may represent a secretion systems specifically evolved to interact with a complex immune system such as that of mammals. While the role and function of ESX2 and ESX4 are still debated, the elucidation of the ESX systems on TB pathogenesis is certainly one of the major advancements of the last decade in the TB field, providing a new understanding of the host-pathogen interaction and very rewarding in terms of new diagnostics and potentially capable of providing new therapeutics and vaccines in the near future.[19,20] The pathogenesis start upon up taking of *M. tuberculosis* and engagement of alveolar macrophages and granulocytes to combat the infection and the fate *of M. tuberculosis* may be clearance or establishment of infection. Inside the macrophage the bacilli replicate leading to hematogenous dissemination leading to pulmonary and may be extra pulmonary forms of disease. Containment of bacilli within macrophages and extracellular within granulomas limits further replication and controls tissue destruction, resulting in a dynamic balance between pathogen and host.[21]

Engagement of Iraq with tuberculosis

Tuberculosis is a public health priority in Iraq. Iraq regard one of the region of high burden of TB, and accounts for 3% of the total number of cases. There are an predictable 20 000 TB patients in Iraq with death rate of 20% annually. Iraq is one of the six countries (Egypt, Indonesia, Yemen , Netherland and UK) whose compile 9% of total incidence of TB worldwide.[22] During 2018 the incidence of TB about 16000 case which compile 0.04% of population. WHO allocate Iraq within group of Eastern Mediterranean which include: Afghanistan, Bahrain, Djibouti, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Jamahiriya, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Rep, Tunisia, United Arab Emirates, West Bank & Gaza Strip, Yemen. Table 1 show high incidence, prevalence and mortality of TB-infected patients in years 2003 and 2004 and this can be interpreted due to bad and high shortage of health service in Iraq directly after 2003 invasion war by US army while years after 2004 (2005-2017) show decrease in incidence, prevalence and mortality due to improvement of health service and good financial support to combat the threating diseases. Concern the age groups of patients with TB, it seems the 25-34years and 15-24years were most common for male and female respectively.

Table 1 Epidemiology and age groups engaged with TB among Iraqi peoples

Year	No. of Incidence	No. of Prevalence	No. of Death	Common incidence age group (year)	
				Male	Female
2003	39552	59419	8298	25-34	15-24
2004	37113	55976	7807	25-34	15-24
2005	16137	21823	3054	25-34	15-24
2006	15968	22326	3110	25-34	15-24
2007	16 241	22 866	3 190	25-34	15-24
2009	20000	36000	4200	35-44	15-24
2010	20000	37000	3900	25-34	15-24
2011	14000	23000	970	25-34	15-24
2012	15000	24000	960	25-34	15-24
2013	15000	8225	790	25-34	15-24
2014	15000	8268	790	25-34	15-24
2015	16000	8255	860	25-34	15-24
2016	16000	7317	1200	25-34	15-24
2017	16000	7 853	1100	25-34	15-24

Conclusion

The current review conclude that, decreasing in incidence, prevalence and mortality for last 7 years due to application of national and international health polices of TB in Iraq.

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Conflict of interest

The authors declare no conflict of interest.

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