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Mycology: Fungal infections

Burden of serious fungal infection in Iraq

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Introduction:

Studies regarding fungal infections in Iraq are limited, despite development of some advanced and private laboratories; governmental sectors have limited diagnostic procedures and no data on the epidemiology of fungal infections. Recently, reports warned of increased mortality rates due to cancer, raising the spectre of serious fungal infections. The demographic, geographical and climatic variations of Iraq are large.

Methods:

The estimation and data used in the present study were collected and reviewed from published data in Iraq, non-published master and PhD theses, hospital and private clinic records. This is in addition to epidemiological studies from environments similar to Iraq. Population data were obtained from an official published report of the central statistical organization of ministry of planning of Iraq, non-governmental organizations, and the World Health Organizations (WHO) reports. Data related to the incidence of HIV/AIDS, cancer, chronic obstructive pulmonary disease (COPD), and asthma were estimated and reviewed from local publications and some regional studies from the Middle East. The data were also confirmed and supplemented by personal communications with medical mycology professionals form different parts of Iraq.

Results:

Iraq is a Middle East country with population from different ethnic and national backgrounds. The populationis ≈ 34 million, with 17.4 million males. Recurrent vaginal thrush is the most frequently diagnosed fungal infection in women which estimated to quote 6% of women of child bearing age (15-50 years) (n=452,939) women. Oral thrush was estimated to affect 74/100,000 of population. With a burden of 65,200 cases in Iraq, tineacapitisis more problematic in the middle and south parts of Iraq cases due to their poor hygiene and low socio-economic status. COPD is common in Iraq with hospital admissions in 2011of 47,800. Asthma in children is 7.2% and so estimated at 132,214 adults. Some forms of aspergillosis was diagnosed in 14% of those patients, so we have applied the high Iranian rate of 4.1% to all adult asthmatic to derive ABPA prevalence (n=5,421).Invasive fungal infections in Iraq were mostly related to immune dysfunction and critical care. Cancer rates are rising (n>= 15,000). We assumed a candidaemia rate of 5/100,000 (n=1700), a post surgical Candida peritonitis rate of 50% of ICU candidaemia (n=255) and 892 invasive aspergillosis cases (30% in haematological malignancy). Few people with HIV/AIDS are present in Iraq (n≈1000). The most frequent isolates are *Candida* spp. Usually*Candida albicans*with few isolations of *Aspergillus*.

Conclusion:

Epidemiological studies and precise records of fungal infection in Iraq arelacking, which may underestimate the frequency of serious infections.The present study is the first summary of fungal infection in Iraq. Validation and modification of these estimates are applicable in future epidemiological approaches.

Infection	Number of infections per underlying disorder per year					Total Burden	Rate /100K
	None	HIV/AIDS	Respiratory	Cancer/Tx	ICU		
Oral candidiasis		90				90	0.26
Oesophageal candidiasis		48				48	0.14
Candidaemia				1190	510	1700	5
Candida peritonitis					255	255	0.75
Recurrent Candida vaginitis (>4x/year)	453,000					453000	2664
Allergic bronchopulmonary aspergillosis (ABPA)			5421			5421	16
Severe asthma with fungal sensitisation (SAFS)			4363			4363	13
Invasive aspergillosis				270	621	892	2.62
Chronic pulmonary aspergillosis			389			389	1.15
Mucormycosis				68		68	0.2
Cryptococcal meningitis						0	0
Pneumocystis pneumonia		0.5				1	0
Tineacapitis	65200					65200	192
Total burden estimated	518,200	139	10,173	1,528	1,386	531,427	2,895