Pattern of admission to Hospitals During Muslim Pilgrimage (Hajj)

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ABSTRACT

Objectives: The pattern of medical conditions necessitating admission differs according to the weather condition in that particular year. Previous studies had been conducted during the hot weather, none over the last 10 years, were carried out during, the milder weather we are experiencing. The aim of this study is to establish the pattern of admission during this mild weather and to elucidate the possible risk factors.

Methods: A prospective study was performed in 4 hospitals in 2 different locations in Al-Mashaer, Kingdom of Saudi Arabia. Data were collected during one working shift in 2 hospitals in Arafat on the 9th of Dhul Hijjah 1422, corresponding to 21st of February 2002, and another working shift in 2 hospitals in Mina on the 10th of Dhul Hijjah 1422, corresponding to 22nd of February 2002.

Results: A cohort of 76 patients from Arafat hospitals and 84 patients from Mina' hospitals were included (total 160 patients). Males constituted 62% and females 38% with the median age of 60 ± 15years. The respiratory system was the most commonly affected (57%), followed by cardiovascular system (19.4%), and gastrointestinal tract (GIT) in 6.3% c cases. There were only 3 cases of heat-related admissions wit only one confirmed case of heat stroke. Similarly, only or case of meningitis was confirmed in this cohort. Pneumoni was encountered in 63 cases (39.4%) and exacerbation c asthma and chronic obstructive pulmonary diseases (COPI in 23 cases (14.4%). Pre-existing co-morbid medic conditions had included bronchial asthma and COPD (22.5% hypertension (17.5%), and Diabetes mellitus (15% Short-term follow up (24-48 hours) identified 2 deaths (1.3% 94 patients (59%) were transferred to other secondary c tertiary care facilities and 64 (40%) were discharged home.

Conclusion: Hospital admission during Hajj is related to ol age and occurs in patients with associated co-morbi conditions. During this mild weather lower respiratory tra infections and exacerbation of bronchial asthma and COPI are the most commonly encountered diseases during Hajj.

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Hajj (Pilgrimage) is a special season where more than 2,000,000 Muslims from more than 140 countries gather in the holy shrine (Al-Mashaer) to perform this important ritual of Islam. Hajj is performed in Makkah, and Al-Mashaer, Kingdom of Saudi Arabia (KSA) which includes Mina, and Arafat. The ritual starts on the 8-13th day of Dhul Hijjah, the 12th month of the lunar Islamic calendar. Pilgrims gather in Arafat on the 9th day and in Mina from the 10-13th of Dhul Hijjah. The pattern of admission to Al-Mashaer hospitals depends o the weather condition of that particular year. Hajj of thi year (1422) fell during the month of February 200 During hot weather, heat-related syndrome gastroenteritis and food poisoning constituted the prim diagnoses.[1-4] To our knowledge, the last study performe on pilgrims was performed in 1993 and was conducte in Al-Medina Al-Munawarah[5] not in Al-Mashaer area which are considered to be considerably different in it

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crowdedness, physical exhaustion and the exposure to the hot environment.

This study aims to elucidate the pattern of admission during this mild weather with the attendant demographics in order to help health policy makers to plan futuristic services and research.

Methods. There are 7 hospitals in Al-Mashaer, 4 in Mina and 3 in Arafat. They are considered as primary and secondary care facilities to cater to the urgent medical needs of pilgrims. These hospitals are well equipped for the emergent treatment and as short-stay facilities. Patients who require tertiary care medical services or whom require long term hospitalization are transferred to other hospitals either in Makkah or in Jeddah. Patients are also transferred from one facility to another in Al-Masher's area in order to allow pilgrims to complete their pilgrimage. To avoid location bias, hospitals in Al-Mashaer that were easily accessible to ambulances and other cars were selected. Two hospitals in Arafat and 2 hospitals in Mina were, therefore, chosen. The other 3 hospitals in Al-Mashaer were not included in the study as they were located in very crowded areas that serve the surrounding camps and tents. All patients admitted during the morning shift (8am-8pm) on the 9th of Dhul Hijjah 1422 Hejra (corresponding to the 21st of February 2002) in Arafat hospitals and on the 10th of Dhul Hijjah 1422 Hejra (corresponding to the 22nd of February 2002) in Mina were included in the study.

Each patient is followed until discharged, transferred to other hospital or announced dead. Patient diagnosed dead on arrival or died in emergency room before being admitted were not included in the study. The outcomes of patients were determined on short term basis as the system of admission in those hospitals mandates this approach. Rarely, patients stay in the hospital for more than 48 hours as transfer to other secondary care or tertiary care hospitals are essential in order to vacate these hospitals to receive more cases or in anticipation of potential disaster.

Results. The total number of admitted patients from one working shift from 4 hospitals was 160 patients; 76 patients from Arafat hospitals and 84 patients from Mina hospitals. Males constituted 62% and females 38% with the median age of 60 ±15 years (**Table 1**). Most of the admissions were from Arab countries (45.6%), Indian subcontinent (17%), non-Arab African countries (11.3%), and Indonesia and the Far East (11.3%) (**Table 2**). The respiratory system was the most commonly affected (57%), followed by cardiovascular system (19.4%) and GIT in 6.3% of cases. There were only 3 cases of heat-related syndromes with one definitive heat stroke. Similarly, only one definitive case of meningitis was confirmed (**Table 3**). The most common symptoms were shortness of breath (53%), cough (49%), fever (47%), disturbed level of consciousness (27%) and chest pain (12.5%) (**Table 4**). Clinical conditions on admission were recorded. Approximately 25 patients (15.6%) required mechanical ventilation, most of them on arrival to the emergency room, while 76 patients (47.5%) were tachypneic. Cardiovascular instability was present in 14 patients (8.8%) and pyrexia on presentation was seen in 69 patients (43%) (**Table 1**). Lower respiratory tract

Table 1 - Demographic data, and clinical characteristics of the study cohort.

Demographic data	n	(%)
Arafat hospitals	76	(47.5)
Mina hospitals	84	(52.5)
Age (median ± SD)	60 ± 15	(22-90)*
Male	99	(61.9)
Female	61	(38)
History of diabetes mellitus	24	(15)
History of hypertension	28	(17.5)
History of chronic obstructive pulmonary disease	36	(22.5)
Found to be human immuno-deficiency virus positive	3	(1.9)
Febrile on admission	69	(43.1)
Hypertensive on admission	30	(18.8)
Hypotensive on admission	14	(8.8)
Required ventilation	25	(15.6)
Tachypneic	76	(47.5)

* Denotes range

Table 2 - Origin of patients by geographical zone.

Zone	n	(%)
Arab countries	73	(45.6)
Indian subcontinent	27	(16.9)
African (non Arab speaking)	18	(11.3)
Far East	18	(11.3)
Iran	10	(6.3)
Europe	7	(4.4)
Central Asia	4	(2.5)
Unknown	3	(1.9)

Table 3 - Diagnosis of patients admitted to Al-Mashaer hospitals.

Diagnosis	n	(%)
Pneumonias	63	(39.4)
Chronic obstructive pulmonary disease exacerbation	23	(14.4)
Ischemic heart disease	14	(8.8)
Heart failure	10	(6.3)
Upper respiratory tract infection	5	(3.1)
Stroke	4	(2.5)
Arrhythmia	4	(2.5)
Diabetic ketoacidosis	4	(2.5)
Trauma	3	(1.9)
Acute abdomen	3	(1.9)
Upper gastrointestinal bleeding	3	(1.9)
Pyrexia of unknown origin	3	(1.9)
Gastroenteritis	3	(1.9)
Heart-related syndrome	3	(1.9)
Cellulitis	2	(1.3)
Hypertensive emergencies	2	(1.3)
Seizure	2	(1.3)
Meningitis	1	(0.6)
Miscellaneous	8	(5)

Table 4 - Presenting symptoms of the study cohort.

Symptoms	n	(%)
Dyspnea	85	(53)
Cough	78	(49)
Fever	75	(47)
Disturbed consciousness	39	(24.4)
Chest pain	20	(12.5)
Abdominal pain	10	(6.3)
Coma	4	(2.5)
Trauma	4	(2.5)

infections, mostly pneumonias, were the most commonly encountered diagnoses in 63 cases (39.4%). Exacerbation of asthma and COPD were seen in 23 cases (14.4%). Other diagnoses are outlined in **Table 3**.

Pre-existing co-morbid medical conditions include bronchial asthma and COPD (22.5%), hypertensio (17.5%), and diabetes mellitus (15%) (**Table 1**). Short-term follow up (24-48 hours) identified 2 death (1.3%), 94 patients (59%) transferred to other secondar or tertiary care centers and 64 (40%) discharged home.

Discussion. This is the first study conducted i Al-Mashaer area on the pattern of admission to hospital in the winter season (20°C during night and 32°C durin the day). Previous studies[1-4] were conducted in th summer season, which had shown heat-relate syndromes to be the primary diagnosis. In the summe season many publications have understandably deal with various methods in dealing with such clinica entities.[2,6-8] In our study, definitive heat stroke wa confirmed only in one elderly Egyptian patient wh reported late and unfortunately did not survive Certainly, there were cases of heat exhaustion, whicl were treated for few hours and subsequently discharge home. These cases were not included in our study, a they were not admitted to the inpatient area. We foun lower respiratory tract infection and exacerbation o bronchial asthma and chronic obstructive pulmonar disease to be the most common diagnoses (39.4 an 14.4%). This can be justified on the fact that th combination of crowdedness and somewhat col weather might have predisposed them to these ailments More so, many of these patients were elderly and hac underlying co-morbid conditions in the form of diabete mellitus and chronic obstructive pulmonary diseases Similarly, only one case of definitive meningitis wa confirmed. This is contrary to previous studies, whic have reported high incidence and fatality rate among patients attending and returning from Hajj.[9-11] This coul be explained by the ministry of health's strict regulation on mandatory vaccination of all pilgrims with quadri-valent meningococcal vaccine.[12-13]

Surgical diagnoses were seen on only in 8 cases (5%). The low percentage could be attributed to low incidence of trauma cases (only 3) due to the absence of any disaster this year contrary to previous reports.[14,15] We did not attempt to differentiate between patients admitted to Arafat's hospitals from those admitted to Mina's hospitals. This is due to the fact that they are the same study population, namely, pilgrims, and they share a similar weather condition, and available medical facilities. The outcome has been decided in advance to be a short-term outcome. This is due to the fact that the operation of these hospitals mandates transfer of the very ill patients or patients who require long term hospitalization to other facilities. It is apparent that we report a lower number of deaths (2 patients) in our study compared to what has been reported in previous years.[1-8] Ghaznawi and Ibrahim[3] had reported high mortality rate in Hajj season of 1405 H (1985 AD). In that hot season, the large number of deaths (1,784) is explained by the high incidence of heat stroke with the attendant high

mortality rate. In addition, meningitis and trauma were responsible for the high fatalities in the previous Hajj seasons[10-15] which is obviously lacking in the Hajj of 1422 H/2002 AD. Certainly, our reported number of deaths may significantly underestimate the true number as our study looked only into short-term outcome due to the nature of operation of these hospitals. It is clear that most of our cohort (58.8%) were transferred to other facilities, many of them were critically ill and conceptually may carry high mortality rate. Furthermore, the significant advances in provision of health care to pilgrims might be responsible for the good outcome.

In conclusion, our results show respiratory diseases are the most commonly encountered diagnoses during this mild weather. Old age and co-morbid conditions has probably contributed to this preponderance. More research is needed on this area to define microbiologic pattern and long-term outcome of these cases.

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