

Medical Problems Encountered Among Travelers in Bahrain International Airport Clinic

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Background. The Middle East is one of the most rapidly growing destination for travelers.

Objective. The aim of this study was to determine the medical conditions affecting travelers needing medical assistance in Bahrain International Airport (BIA).

Method. Logbook documenting medical conditions of travelers presenting to the BIA clinic from January 1 till the end of December 2004 was reviewed.

Results. A total of 3,350 travelers attended the clinic, constituting 0.12% of the disembarking and transit travelers. Most common conditions faced were respiratory problems (24.4%), followed by headaches (19.2%), trauma, musculoskeletal pains (12.9%), and gastrointestinal problems (11.0%). Only 2.1% of all complaints were referred to secondary care. The majority of cases were handled by the nurse.

Conclusions. Majority of the patients examined had acute minor medical problems. Ninety-eight percent of conditions affecting travelers were handled in the airport clinic by the nurse and the family physician. Airport clinic could serve as an efficient emergency triage system for filtering serious illnesses needing urgent management.

Travel medicine has developed into a unique medical specialty that transcends the management, health education, behavioral changes, and reduction in injuries.¹ One of the major reasons for the rising rates in the international travel is expansion of tourism, which has risen more than 7% per year during the past four decades.¹

Between 20 and 70% of the 50 million people traveling each year from the industrialized to the developing world report some illness associated with their travel. Although most illnesses reported are mild, 1% to 5% of travelers become ill enough to seek medical attention either during or immediately after travel. Of these, 0.01% to 0.1% of travelers require medical

evacuation, and 1 in 100,000 dies.^{1,2} While Europe remains the leading destination for tourists, East Africa, the Pacific, the Middle East, and Africa are rapidly growing destinations (recent annual growth rates ranging from 10% to 25%). Additionally, there is a significant increase in number of elderly travelers and a rapid growth of tourism to developing regions of the world, both carrying high risks for travelers.^{1,3}

Bahrain International Airport (BIA) experienced its busiest year in 2004, with a 20% growth in passengers. During that year, there were 5 million passengers, with 2,836,649 arrivals and transit passengers.⁴ The airport serves the Kingdom of Bahrain, covering an area of 711.9 km² in the Arabian Gulf, with an estimated population of 689,418 in 2003, of which 62.1% are Bahraini.⁵ A health clinic specified for travelers who are coming into or departing from the airport is situated in BIA, with easy access from arrival, departure, and transit areas. The passengers' clinic is staffed by experienced registered nurses on a 24-hour basis, backed up by a family physician with 31 years of practice experience. The physician is on-call around the clock.

Sick passengers are first assessed by the nurse, who decides whether to consult the physician or

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manage the problem alone. Guidelines for managing more than 40 common problems are available to the nurse, who after assessing the sick passenger decides if management is within the nurse's competence and scope of practice or if consultation with the physician is required. The doctor may manage the patient over the phone or attend to the patient in person. Sick passengers access the clinic by themselves or are taken there by the civil aviation personnel or aircrew team. After preliminary evaluation, the patient is either managed in the airport clinic or after stabilization is referred to the hospital. Each sick passenger is encountered by one visit to the clinic during his/her embarking/disembarking. No follow-ups or repeated consults were encountered.

Methods

Logbook for patients presenting to the BIA clinic from January 1 till the end of December 2004 was reviewed. Items noted included presenting problem(s), nationality of the patient, time of attendance, and disposition of the patient. Chi-square test was used to examine the significance of differences using Statistical Package for Social Sciences Program, version 11.0 (SPSS Inc., Chicago, IL, USA).

Results

A total of 3,350 travelers attended the clinic seeking medical advice over the study period. This constituted 0.12% of the disembarking and transit

travelers. The nationality and age distribution of the travelers are shown in Table 1. The average age of the patients was 34.4 years (range 2 mo to 90 y). Men accounted for 64% of the patients. The distribution of patients over the three nursing shifts was almost equal, with minimal insignificant increase in the evening hours.

A medical diagnosis was available for 77.8% of the 3,350 travelers who required medical assistance in BIA. Table 2 shows the problems for which travelers' required medical assistance. Most common health problems diagnosed were upper respiratory tract infections (24.4%), headache (19.2%), simple injuries, musculoskeletal pains (12.9%), and gastroenteritis (11.0%). The vast majority of patients were managed at the clinic and finalized by the nurse alone.

Only 2.1% of the patients observed needed urgent referral to secondary care. Of these, 19 (26.8%) were attended by the family physician, 25 (35.2%) referred after consulting with the physician over the phone, and 27 (38%) referred immediately by the nurse due to the critical condition of the patient. The leading causes for referrals were chest pain (69%), followed by trauma. Of these injured, only 15 of 205 (7.3%) patients needed referral for additional investigations and intervention. Of the 71 patients referred, 43.7, 39.4, and 16.9% were referred during the night, afternoon, and morning shifts, respectively. Referrals to hospital were more significant in the afternoon and night shifts ($\chi^2 = 9.011, p = 0.011$).

Table 1 Distribution of travelers according to age and nationality

Nationality	0–10	10–20	20–30	30–40	40–50	50–60	60–70	70–80	>80	Total
Indian	26	10	113	120	69	25	7	7	1	378
Filipino	13	3	91	151	80	16	1	0	0	355
British	34	16	55	56	59	55	37	6	0	318
Pakistani	17	20	82	70	42	13	11	4	0	259
Bahraini	33	11	34	57	50	23	8	5	1	222
Saudi Arabian	19	10	43	55	37	12	3	0	0	179
Australian	42	18	27	20	26	13	5	7	1	159
Kuwaiti	20	15	35	28	16	5	3	0	0	122
Egyptian	5	2	29	28	42	4	2	0	1	113
Bengali	2	0	40	40	14	1	1	0	0	98
Persian	4	7	11	22	17	14	4	3	0	82
Jordanian	6	3	17	20	8	6	4	0	1	65
American	9	3	16	12	9	9	5	1	0	64
Lebanese	16	1	16	17	5	1	2	0	0	58
Qatari	6	5	13	11	11	3	1	0	0	50
Others	58	43	176	177	97	35	26	6	3	621
Total	310	167	798	884	582	235	120	39	8	3,143
Unknown nationality and/or age	—	—	—	—	—	—	—	—	—	407

Table 2 Reasons for medical assistance in Bahrain International Airport

Problem	Encounters, <i>n</i> (%)
Upper respiratory tract problems	816 (24.4)
Headache	642 (19.2)
Musculoskeletal problems	434 (12.9)
Gastroenteritis	368 (11.0)
Medication and assist	230 (6.9)
Short breath	82 (2.4)
Psychiatric problems	35 (1.1)
Problems not documented	743 (22.2)

Death was reported in two individuals: the first patient was a 54-year-old woman who suffered from chest pain on board and arrived dead by a diverted plane and the second patient arrived in a very critical situation and died within few minutes without a diagnosis.

Discussion

This study is the first that explores medical conditions encountered at the BIA. While difficult to investigate due to the ubiquitous nature of the illness,⁶ respiratory problems and common colds headed the list of medical conditions in this study (24.4%). The severe acute respiratory syndrome (SARS) outbreak of 2002 showed how air travel can have an important role in the rapid spread of newly emerging infections and could potentially even start pandemics.⁷ Transmission of upper respiratory infections to other symptom-free passengers within aircraft cabin is associated with sitting within two rows of a contagious passenger for a flight time of more than 8 hours and is not a consequence of recirculating 50% of cabin air as previously believed.⁸ Until the emergence of the SARS epidemic, respiratory infections were not commonly considered an important cause of travel-related morbidity and mortality. Therefore, upper respiratory tract infection was our concern in 2004. When comparing to previous reports, respiratory symptoms are seemingly becoming more prevalent than alimentary complaints.⁹ This could be due to more awareness and fear among travelers of the impending new respiratory infections, which necessitate them to seek early evaluation and treatment.

Neurological symptoms included giddiness, faintness, and headaches, with the latter being the most common. Neurological symptoms are the single largest category of medical incidents, prompting 31% of all air-to-ground medical calls and causing 34% of all diversions (second reason for diversion after cardiovascular problems). Seizures,

dizziness/vertigo, and loss of consciousness/syncope were the most common reasons for diversion.¹⁰ Despite the fact that the problem of jet lag could not be studied specifically in relation to the neurological symptoms, jet lag can still overlap with many of the neurological complaints encountered.

A common health problem associated with travel in developing countries is travelers' diarrhea. Diarrhea affects 30% to 80% of international travelers. In this series, 11% of travelers suffered from gastrointestinal problems. Though mortality caused by travelers' diarrhea is extremely uncommon, the morbidity of untreated disease is substantial.¹¹ Because no stool analysis was done, one cannot be sure if the diarrhea is due to infection. Diarrhea is also a symptom of irritable bowel disease, which may occur with the stress accompanying traveling.

Psychiatric complaints accounted for 1% of total medical cases encountered. Despite the fact that the percentage of psychiatric problems was low, the actual risk may be much higher. Travel often involves stresses such as family separation, distance from usual support systems, cultural and linguistic adjustment, jet lag, fatigue, and illness. These stresses can provoke either new or relatively dormant psychiatric illness. In this context, the dyschronism of circadian rhythms and jet lag probably play a role in the exacerbation of major psychiatric disorders.¹² Physicians should also be aware that illicit drug use and malarial medication can be the cause of some psychiatric ailments in travelers; addressing these issues are important in the returning travelers.¹³

An Australian report showed that musculoskeletal problems made up one fifth of claims filed by travelers.¹⁴ In this study, musculoskeletal problems and injuries accounted for 12.9% of all complaints. This is lower than that reported in the literature due to the fact that most injuries may have been encountered only during the travel trip and not throughout the period of travel. Twenty-one percent of the falls were related to escalators; these accidents are amenable to intervention strategies and can be prevented. Furthermore, lacerations and fractures seem to occur more in travelers than in local people, and there is evidence that such injuries tend to be more serious among travelers.¹⁵

The most common complaint necessitating referrals in our series was chest pain. This is significant because most common causes of serious morbidity and mortality associated with chest pain in travelers relate to cardiovascular diseases^{16,17} and venous thromboembolism, the latter representing a significant public health problem in some countries like New Zealand.¹⁸

Thirty-eight percent of the referrals were made by the nurse and agreed upon later by the physician. The percentage of sick passengers who needed evacuation to hospital was less than that in other published reports. This may be due to missing serious medical conditions or the inclusion of more sick patients on board to begin with and who needed medical attention during and immediately after travel.¹ The airport clinic could resemble for some an emergency unit, where seeking medical care would shorten waiting times and avoid appointments, thus offering quick answers about the urgency of their condition in timely and efficient manner.

The majority of sick travelers were handled by a well-trained nurse. A considerable number of passengers needed only assurance, who presented with minor complaints like common cold, gastroenteritis, muscle pains, and minor traumas, and others requested refill of medications. The nurses involved have long experience of more than 25 years and good training. The availability of clinical guidelines besides the latter two issues may explain why the physician involvement was not frequent. The increase in referral to secondary care during the night and afternoon was correlated with increase of passengers' traffic during this period.

Our work suggests a good and an efficient role model illustrating good team spirit, skilled and competent personnel in delivering medical care, and an efficient triage system.

The provision of health advice and the administration of prophylactic measures can help reduce the morbidity and, at times, mortal risks of infectious illnesses that may be acquired during international travel. Even the most up-to-date information sources, however, may not be able to provide precise information on specific diseases prevalent in specific locales because mechanisms for recognizing and reporting diseases are often lacking in developing areas.¹⁹⁻²¹

Conclusions

The majority of the problems encountered were minor, which were managed by the nurse. Availability of a physician was important in finalizing and assessing critical cases. Upper respiratory tract infections were the most common reason for those visiting the clinic. With the emergence of new diseases, like SARS and Avian flu, caregivers need to be updated on the most recent diseases related to travel.

The study shows that availability of a nearby clinic is important, especially when illness necessitates immediate care such as myocardial infarctions and where

first aid care can be provided before transfer to hospital. In addition, travelers can always resort to airport clinics for advice rather than depending on travel brochures that may suffer sometimes from inadequacies.

Declaration of Interests

The authors state that they have no conflicts of interest.

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