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Research Article

Threat of Invasive Meningococcal Disease Linked to Travel in State of Kuwait

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Abstract

Background: Meningococcal meningitis is the term used to describe a bacterial form of meningitis caused by Neisseria meningitidis. This form of meningitis is associated with high morbidity and mortality. Two outbreaks recorded to be related to Haj/Umrah pilgrims one in the 1990s, this was followed by the substantial outbreaks in 2000/2001 in which 654 IMD cases related to Hajj and Umrah among pilgrims and others in Saudi Arabia. **Aim:** This review report on recent data about meningococcal meningitis cases in Kuwait mainly linked to travel specifically to Umrah during high season and to explore the epidemiology of meningococcal disease in State of Kuwait. **Method:** Data were collected from Kuwait Ministry of Health (Communicable Disease Control Department) and from different Health Regions notification and records, including Meningitis investigating form. **Conclusion:** Meningococcal disease remains a major public health concern and results in significant morbidity and mortality throughout the world. Hajj and Umrah are large gatherings with the potential for the transmission and spread of meningococcal disease if proper precautions are not taken.

Keywords: Epidemiology; Umrah and Hajj; Immunization, Meningococcal disease; Outbreak

Background

Meningococcal disease is caused by the bacterium Neisseria meningitidis (Nm). The bacterium is often detected in the nasopharynx without causing disease, asymptomatic carriage is transient and typically affects ≈5%-10% of the population at any given time [1]. The bacteria occasionally invade the body causing an acute severe meningococcal bacterial infection, Invasive Meningococcal Disease (IMD) is a major cause of meningitis and septicaemia [2]. Meningococcal meningitis is characterized by sudden onset of headache, fever, and neck stiffness, sometimes accompanied by nausea, vomiting, photophobia, or altered mental status. Meningococcal bacteria can be transmitted from person-to-person, either from asymptomatic carrier or person with invasive disease, through direct contact with large droplet respiratory secretions or saliva. Meningococcal disease progresses rapidly and has a case-fatality rate of 10%-15%, even with antimicrobial drug treatment, actually without rapid treatment, fatality rates can be much higher [1-3].

Meningococcal Disease in Kuwait

Meningococcal disease is a nationally notifiable disease under category 1 (i.e. immediate notification by phone once a suspected or confirmed case discovered), cases reported to communicable disease control department (CDC-KW) and to the nearest preventive health center in its residential catchment area without delay. Blood and cerebrospinal fluid (CSF) investigations including culture & sensitivity tests are indicated for patients with suspected meningococcal disease.

Kuwait is not endemic with meningococcal disease however, importation of bacterium causes sporadic cases in the country. Incidence rates of meningococcal meningitis controlled and maintained during the last 20 years in Kuwait at less than 1 case/ 100.000 of population, in 2023 it was 0.02 /100.000 of population (Figure 1), The last outbreak in 1987 was linked to travel to Mecca, 26 cases were reported, majority (88.5%) were serogroup A, 16 cases were pilgrims after the return of from Mecca, and case fatality rate was 30.7% as 8 cases passed away. Vaccination campaign was conducted at that time consequently 139,107 persons were vaccinated with meningococcal AC vaccine from September to December 1987. Since then health authorities applied vaccination with meningococcal vaccine as a prerequisite for all pilgrims from Kuwait before travelling to Hajj, also recommended to their contacts and people going to Umrah or endemic countries at any time during the year.

During the last five years (2019-2023) only one child discovered positive for meningococcal meningitidis in 2019 who was a close contact to traveller from UK; since then no cases linked to travel. However, in 2024 (from January to June) there were 6 confirmed meningococcal cases; 5 cases were linked to travel before appearance of symptoms, 3 cases were linked to travel Umrah in Kingdom of Saudi Arabia (KSA) during the peak of Umrah season, 1 case travelled to Turkey & 1 case was a close contact to a traveller from United Arab Emirates (UAE). The first case was Kuwaiti young lady diagnosed as meningococcal meningitis clinically, the patient passed away within a week of symptoms' onset, first informed that her father travelled recently to Umrah however the family denied any travel history. The second case was a non-Kuwaiti new-born aged 30 days he was in contact with his father who returned recently from Umrah. The last case was an Egyptian 41 years old man, had symptoms of meningitis within one week after returning from Umrah, other cases were: One case Kuwaiti lady 62 years old symptoms appear within one week after return from Turkey, and one case is for Indian child 11 years old he was in contact with his father who return from UAE. Preventive measures have been taken and all household contacts as well as health care workers in charge of caring of cases received chemoprophylaxis and vaccination (Figure 1).

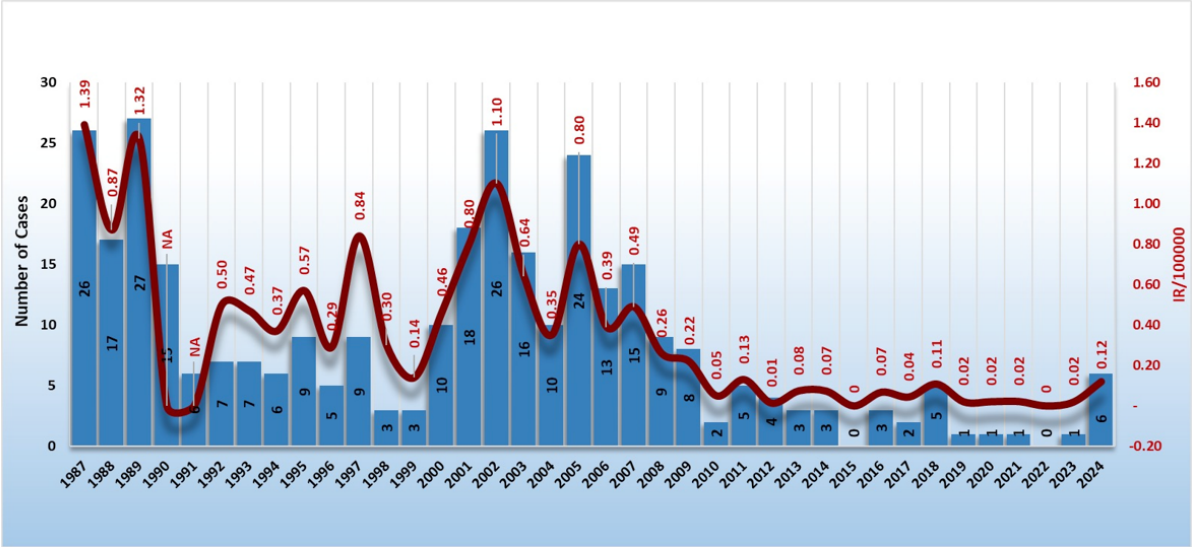

Figure 1: Meningococcal cases and incidence rates per 105population in Kuwait 1987-2024.

Meningococcal Vaccination in Kuwait

Meningococcal vaccination recommendations in Kuwait have changed over the years based on the changing epidemiology of meningococcal infection in the country [4], the quadrivalent meningococcal (MenACWY) conjugate vaccination is included in routine vaccination schedule at age of one year since 2019, also recommended for travellers to countries where meningococcal disease is endemic or required for travel, and for all pilgrims aged one year or older during al Hajj season, contacts of suspected or confirmed meningococcal case including medical and paramedical personnel, as well as contacts of pilgrims before travel to Mecca, also recommended for students in police and military colleges.

Discussion

In the present review, we explore the recent epidemiology of IMD in Kuwait state from the notifications and surveillance reports in MOH records. The increase in the number of cases related to travel in the first half of 2024 may reflect the worldwide epidemic situation.

It is well known that outbreaks of respiratory and gastrointestinal pathogens are likely to occur in mass gatherings as Hajj & Umrah, Olympic games, music festivals, business exhibitions and cultural events [5]. Pilgrimages to Mecca in Saudi Arabia (SA) for Hajj & Umrah "Hajj which is only performed in a specific month every year, while Umrah which is a religious ritual that can be performed at any time throughout the year, but the peak season occurred usually during Ramadan (March-April 2024)" are among of the largest gatherings of their kind in the world and have been associated with outbreaks of meningococcal disease among returning pilgrims and their contacts in SA and other countries [6].

The finding of cases linked to Umrah also reported from Center for Disease Control and Prevention in the United States (CDC) in April 2024 when 12 cases of meningococcal disease linked to travel for Umrah have been reported to national public health agencies in the United States (5 cases), France (4 cases), and the United Kingdom (3 cases); Ten cases were in patients who travelled to KSA, while the other two were in patients who had close contact with travellers to KSA [7].

Outbreaks associated with Hajj pilgrimage gatherings within SA in the 1990s and then in 2000-2001 resulted in significant morbidity and mortality, both locally within SA, and at the regional level in neighbouring GCC Countries [8], The most recent global outbreak of meningococcal disease associated with travel for Hajj was in 2000-2001 and was primarily caused by Nm serotype W135 [7]. Since 2002, KSA health authority has required that all travellers aged one year or older performing Hajj or Umrah provide documentation of either: Quadrivalent (ACYW) Polysaccharide Vaccine, 10 days prior to arrival and should not exceed 3 years (not used anymore in Kuwait), or Quadrivalent (ACYW) Conjugated Vaccine within the last 5 years, and at least 10 days prior to arrival [7,9].

Ministry of Health in Kuwait has taken the following measures as part of the country's efforts to defeat IMD:

Preventive measures should be applied immediately without delay for the cases and contacts: Suspected or confirmed cases should be isolated and droplet precaution measures applied [10]. Empirical treatment with potent antibiotics for suspected cases without waiting for diagnostic testing confirmation. Contacts of a meningococcal case should receive antibiotic chemoprophylaxis as soon as possible after exposure preferably within 24 hours after the index patient is identified, regardless of immunization status, prophylaxis given >2 weeks after exposure has little value. Rifampin, Ceftriaxone and Ciprofloxacin are the first-line antibiotics recommended as chemoprophylaxis. Close contacts also should receive one dose of meningococcal conjugate vaccine (MenACWY).

Vaccinating all children at age two years with bivalent polysaccharide vaccine since 1991 that was changed to quadrivalent polysaccharide vaccine (ACWY) in 1994. Meningococcal-conjugate vaccine was then introduced in 2019, within the Expanded Program of Immunization (EPI) schedule amended to be given at age of one year, ensuring high coverage rates maintained at national and subnational levels. Also, providing meningococcal vaccination for pilgrims and their contacts every year since 1988 and all Hajj pilgrims are given ciprofloxacin (recently changed to Azithromycin due to reports of strains resistance to ciprofloxacin from CDC) before travelling back to Kuwait to eliminate carriers of the bacterium in the nasopharynx. As well as vaccinating travellers to areas endemic with the disease. Follow up on those who have been in contact with patient and give them the necessary vaccination and chemoprophylaxis, and keep them under surveillance to monitor the occurrence of any similar symptoms. And, providing special isolation rooms in hospitals to isolate suspected or infected cases to prevent the spread of infection. In addition, Kuwait has expressed its commitment to the global road map set forth by the World Health Organization (WHO) to eradicate meningitis by 2030, as well as adhering to the guidelines and procedures set forth by the WHO in conjunction with the CDC with regard to vaccination and prevention of IMD.

Recommendations

- Maintain a high vaccination coverage for all children at age of 1 year and other target populations as travellers to Hajj, Umrah & endemic areas.
- Collect a detailed travel history for any reported cases of meningococcal disease.

- Report all cases of meningococcal disease specially people & their close contacts who have recently travel specially visited the holy cities in KSA or other endemic areas.
- Travelers aged one year or older who are performing Hajj or Umrah must be vaccinated with quadrivalent MenACWY conjugate vaccine within the last five years administered at least 10 days prior to arrival.
- All contacts to pilgrims should receive meningococcal vaccine.
- Because of latest reports about stains' resistant to Ciprofloxacin [7], a full dose of Azithromycin or Rifampicin before travelling back to Kuwait in order to control nasopharyngeal carriers of Hajj pilgrims and to prevent local transmission to their contacts
- Understanding epidemiology and risk factors at local and regional level are important to better understand the effectiveness of current preventive measures. It is crucial to continue monitoring the disease trends and outbreaks related to mass gathering as this would help identify policy gaps.

Author Contributions

All authors made a significant contribution to the work reported.

Ethical Approval

This review was conducted in accordance with the declaration of Helsinki. Analysis of data is part of our assignments as preventive doctors, this is approved by the head of the department. The confidentiality of participants was secured by de-identifying all data included in the analysis. Data were kept in an encrypted file and saved on a computer, which was accessible to the principal investigator only.

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