

Rapid communications

CLUSTER OF CASES OF HEPATITIS A WITH A TRAVEL HISTORY TO EGYPT, SEPTEMBER-NOVEMBER 2008, FRANCE

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Since September 2008, 26 cases of hepatitis A with a history of travel to Egypt have been reported in France. Investigations indicate that a common source of contamination linked to Nile river cruises is the most likely explanation of the increase in the number of cases reported in France as well as in several other European Union countries.

Introduction

In France, hepatitis A is a mandatorily reportable disease defined by the presence of immunoglobulin M antibodies to hepatitis A virus (IgM anti-HAV) in the serum. From 1 September to 2 October 2008, 11 cases of hepatitis A with a travel history to Egypt (within two to six weeks prior to symptom onset) were notified by eight district health departments. This number was higher than observed in previous years: in 2006 five cases and in 2007 two cases with a history of travel to Egypt were notified for the period September to October.

An investigation was undertaken to identify the source of infection and implement appropriate measures.

Methods

A case was defined as any person with IgM anti-HAV who had stayed in Egypt between 2 to 6 weeks prior to symptom onset. All cases notified since 1 September 2008 were interviewed by telephone using a standardised questionnaire. Data were collected on age, sex, date of symptom onset, symptoms (jaundice, asthenia, anorexia, vomiting, fever), date of jaundice onset, date of IgM anti-HAV test result, hospitalisation, dates of travel to Egypt, type of travel (with a group or individual), description of the travel (Nile cruise, name of the ship, stay in hotel, name of the hotel), food consumption (raw vegetables, unpeeled fresh fruits, fresh fruit juices, ice creams, seafood, unbottled water, beverages with ice cubes) and vaccination against hepatitis A.

Sera from 11 hepatitis A cases who had travelled to Egypt and had positive results of IgM anti-HAV detected between 13 September and 23 October 2008 were analysed at the National Reference Centre for HAV. Phylogenetic analysis of HAV sequences was performed as described elsewhere [1]. For comparison, eight sequences from patients infected by HAV genotype IB who had travelled to countries other than Egypt were included in the analysis. We also included two strains involved in Belgian HAV cases with a travel history to Egypt in 2008 [2].

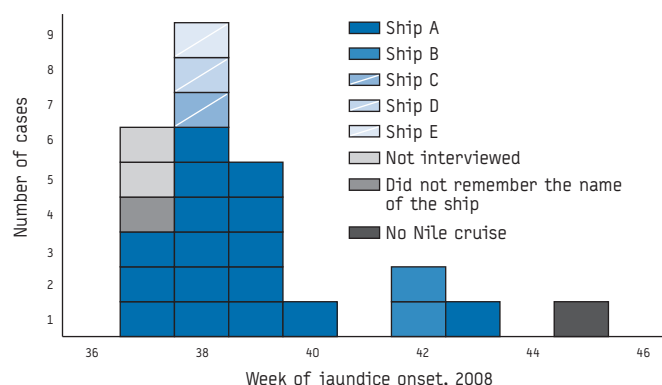
Results

As of 9 January 2009, 26 cases were notified and 24 were interviewed. Among the 26 cases, 13 (50%) were men, and the age of the cases ranged from 10 to 65 years (mean age 32.8 years). Of the 26 patients, 25 (96%) had jaundice (Figure 1) and 17 (65%) were hospitalised. None died. None had been vaccinated against hepatitis A.

Of the 24 patients interviewed, 20 had travelled to Egypt in August, two in September and two in October. The length of their stay ranged from one to two weeks; 23 had participated in an organised tour to Egypt.

All cases except one had gone on a cruise on the river Nile and 15 had stayed in a hotel. Among the 24 cases, nine participated in a cruise only, 14 had gone on a cruise and stayed in a hotel and one had stayed in a hotel only. In 12 out of the 14 cases who stayed both on a ship and in a hotel, the stay at the hotel occurred after the cruise on the Nile.

FIGURE 1
Distribution of cases of hepatitis A with a history of travel in Egypt, by week of jaundice onset, September–November 2008, France (n=25)



Among the 23 cases who had gone on a cruise, 16 (70%) sailed on ship A, two on ship B, three on three different ships (C,D,E) and two did not remember the name of the ship (Figure 1).

Among the 16 cases who sailed on ship A, 11 (69%) travelled from 9 to 16 August and five from 16 to 24 August. The dates of the cruise on ship B were the same for both cases (6 to 13 September). The port of departure and arrival was Luxor for both ships.

Among the nine cases who participated in a cruise only, seven (78%) named ship A, one ship B and one did not remember the name of the ship.

Among the 15 cases with a stay in a hotel, 10 stayed in Hurglada (nine in the same hotel). The remaining five cases stayed in five different hotels in two different towns, Marsa Alam and Cairo. Twelve cases stayed in these hotels in August (11-30), one in September and two in October.

Cases reported consumption of the following food items during their stay in Egypt: raw vegetables (12/23, 52%), unpeeled fresh fruits (12/24, 50%), fresh fruit juices (8/24, 33%), seafood (1/24, 44%). None had ice cream, three (3/23, 13%) drank unbottled water and five (5/21, 24%) had beverages with ice cubes.

Molecular analysis of sera from 11 cases showed they had been infected by HAV genotype IB. A cluster of 10 sequences was

identified in the phylogenetic tree (strain 1) (Figure 2). These 10 sequences were identical over the 440 base-pair fragment analyzed. This cluster also contained the Belgian sequence 2008-Egypt-BEL-1 involved in HAV cases who also travelled to Egypt. All 10 patients have made a cruise on the Nile, though in different ships (six on ship A, one on ship B, one on ship C, one on ship D, one on ship E). The eleventh sequence was from a 12-year-old patient and differed from strain 1 by 7 nucleotides (strain 2) and was also different from 2008-Egypt-BEL-2, the second strain identified by our Belgian colleagues in patients returning from Egypt. IB strains from patients who had travelled in West Africa, South America or others countries in Northern Africa (n=8), were different from strain 1 and strain 2.

Discussion

In October 2008, an increase in cases of hepatitis A who had travelled in Egypt was observed compared to 2006 and 2007 surveillance data. The majority of cases had travelled to Egypt in August 2008 and had gone on a cruise on the Nile river. Among these, more than half had sailed on the same ship (ship A) during two different periods in August. Moreover, three quarters of the cases who only participated in a cruise during their stay in Egypt had travelled on ship A.

On 15 October 2008 France issued a message via the Early Warning and Response System (EWRS). Several European Union (EU) countries (Belgium, Germany, Ireland, Poland) reported single or clustered hepatitis A cases after cruises on the Nile river. None of the cases in these countries named the ships involved in the French investigation.

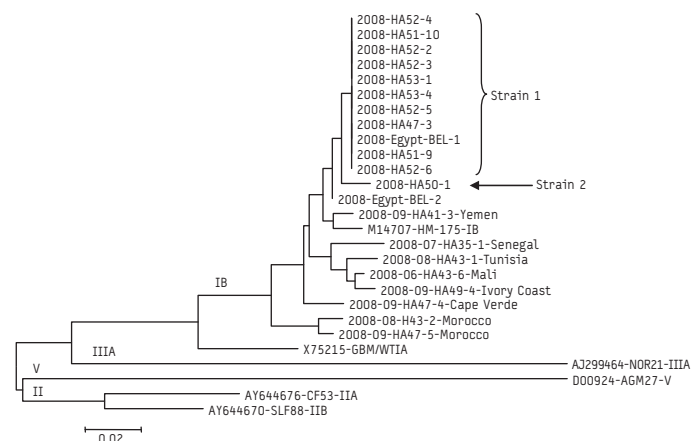
The excess of French hepatitis A cases may be explained by an exposure on ship A. However, the occurrence of cases who had travelled on others ships suggests that exposure to HAV infection was not limited to ship A, and a common source of contamination cannot be excluded (e.g. supplies to the ships, common stop-over). The genetic relatedness of the HAV sequence for all cases who had sailed on a cruise ship, regardless of the ship, supports this latter hypothesis. Several sources of contamination should be considered: consumption of foods or drinks on board of the ships or during stop-over contaminated by different food handlers excreting the virus, contaminated common supplies for the ships, baths in the ship swimming pool or in the Nile river.

Investigation limited to interview information was transmitted to the Egyptian health authorities. Hepatitis A is endemic in Egypt but we are not aware of an increase in the number of hepatitis A cases which could have contributed to an increase of contamination of food or water. The fact that other EU countries reported cases of hepatitis A among travellers who had been on cruises on the Nile river indicates that transmission of hepatitis A on board of ships involved in such cruises may be a relatively widespread problem. It is noteworthy that the main epidemic strains involved in French and Belgian cases are closely related. It is also likely that national surveillance systems in the EU have missed cases related to this exposure.

The French vaccination guidelines recommend hepatitis A vaccination for persons travelling in endemic area such as Egypt. This recommendation is often not followed; in 2007, 40% of hepatitis A cases reported in the surveillance system were imported [3]. Due to this outbreak, information on hepatitis A vaccination

FIGURE 2

Phylogenetic analysis of hepatitis A virus (HAV) strains from patients who had travelled to Egypt, September-November 2008, based on the sequences of the VP1-2PA junction of the HAV genome



Genotype and subtype are indicated for each branch. Reference sequences from GenBank are: genotype IA strain (X75215, GBM/WT), genotype IB strain (M14707, HM-175), genotype IIB (AY644670-SLF88), genotype IIA (AY644676, CF53), genotype IIIA (AJ299464, NOR21), and genotype V (D00924, AGM27). IB sequences from eight patients who had travelled to countries other than Egypt are: 2008-09-HA41-3-Yemen; 2008-07-HA35-1-Senegal; 2008-08-HA43-1-Tunisia; 2008-06-HA43-6-Mali; 2008-09-HA49-4-Ivory Coast; 2008-09-HA47-4-Cape Verde; 2008-08-HA43-2-Morocco; 2008-09-HA47-5-Morocco. The outbreak strains found in Belgium are: 2008-Egypt-BEL-1; 2008-Egypt-BEL-2. A cluster of 10 sequences from the French outbreak is identified as "strain 1", and included the Belgian sequence 2008-Egypt-BEL-1.

was reinforced in public vaccination centres for travellers and in travel companies in France.

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