2012 outbreak of acute haemorrhagic conjunctivitis in Indian Ocean Islands: identification of Coxsackievirus A24 in a returned traveller

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In May 2012, a Coxsackievirus A24 haemorrhagic conjunctivitis was diagnosed in Marseille, France, in a traveller returning from the Comoros Islands. This case allowed identification of the cause of an ongoing outbreak of haemorrhagic conjunctivitis in Indian Ocean Islands, illustrating that returning travellers may serve as sentinels for infectious diseases outbreaks in tropical areas where laboratory investigation is limited.

Background

An outbreak of acute haemorrhagic conjunctivitis occurred from February to May 2012 in Mayotte, a French island in the South-West Indian Ocean, where it accounted for 15% to 45% of consultations in primary care structures [1,2]. Over 1,000 cases had been reported, based on clinical criteria by the end of March 2012 [1,2]. The outbreak had now spread to the Union of the Comoros*, but the current number of cases is unknown. The disease, called *Matso-matso* by the local population (*Matso* meaning 'the eyes' in the local language) is recognised there to be highly contagious, and the intensity of the outbreak is illustrated by the number of people wearing black sun glasses on the streets [3]. Acute haemorrhagic conjunctivitis outbreaks have also been described in local newspapers in Madagascar [4] and Mauritius [5]. The aetiology of this outbreak was not known by 25 May 2012.

Case description

We report here a case of haemorrhagic conjunctivitis in a traveller returning from the Union of the Comoros* to Marseille, France. The patient was in his 20s, born in France, and presented on 14 May 2012 with a diagnosis of lower limb erysipelas secondary to super-infection of arthropod bites, and a bilateral haemorrhagic purulent conjunctivitis that started four days earlier. He had been staying from 15 April to 14 May 2012 in the south of the island of Ngazidja (Grande Comore) with the purpose of visiting friends and relatives. He reported that five close members of his family, as well as other inhabitants of the same village, were affected by bilateral conjunctivitis during his stay. In our hospital, the erysipela was successfully treated by antibiotic therapy (amoxicillin/clavulanic acid, 3 g per day) and the patient was discharged on 18 May, with improvement of conjunctivitis symptoms using nonantibiotic eye lubricant drops. No secondary conjuntivitis cases were observed among his relatives in France.

Virological analysis

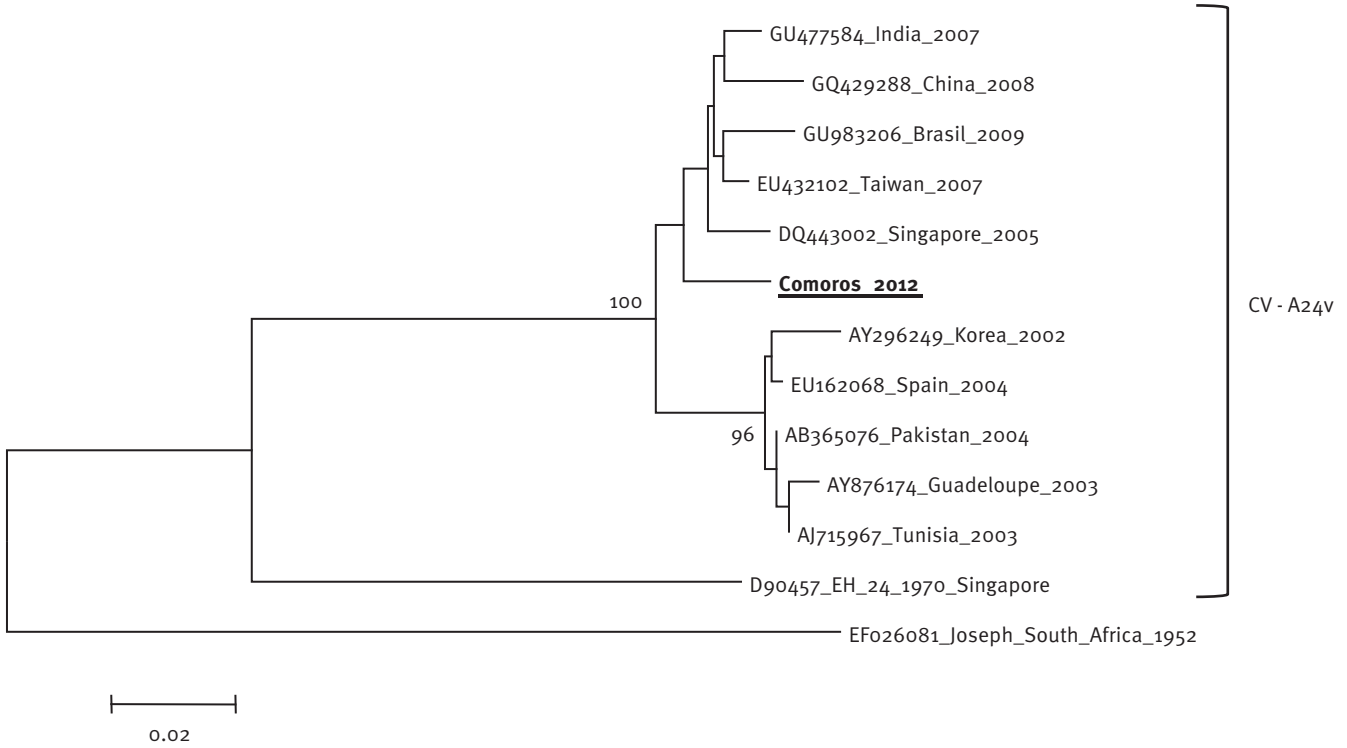
Conjunctival swabs were sent to the laboratory of virology at the Marseille University Hospital. A real-time PCR assay detecting human enteroviruses was performed as described previously [6] and enterovirus RNA was detected (cycle threshold: n=34). Virus isolation was attempted using Vero, BGM and MA104 cells and is still in progress, and molecular typing (nested RT-PCR) was performed as previously described [7], using the nucleic acid extract of the initial sample. The nested PCR allowed amplification of a 327 bp partial sequence of the VP1 gene. Direct sequencing of the amplicon provided the definitive identification of coxsackievirus A24 variant (CV-A24v) via BLAST analysis [8]. The partial sequence obtained was aligned for comparison with other homologous CV-A24v virus sequences using Clustal X [9]. Phylogenetic analysis was performed using neighbour-joining method (Jukes–Cantor algorithm) in MEGA 5.0 software [10] and confirmed that the virus detected is CV-A24v (Figure). The sequence has been deposited in GenBank under accession number JX196594**.

Discussion

Coxsackievirus A24, enterovirus 70 and some adenovirus serotypes are the main pathogens responsible for acute haemorrhagic conjunctivitis, which occurs as

Figure

Phylogenetic analysis of coxsackievirus A24v patient isolate, based on a partial VP1 nucleotide sequence, Marseille, May 2012



The phylogenetic tree was based on nucleotide sequences in the VP1 gene. It was constructed using the neighbour-joining method. Bootstrap values >70% are indicated (1,000 replicates). The virus called Comoros_2012 is that detected in this study (complete sequence available on request)

seasonal outbreaks, particularly in tropical and subtropical areas [11]. Epidemics were first described in Ghana in 1969 [12], and CV-A24v was first isolated during an epidemic in Singapore in 1970 [13]. In the past four decades, CV-A24v was recognised as the major pathogen responsible for acute haemorrhagic conjunctivitis epidemics [14-16] and has recently been responsible for outbreaks in Brazil, China, Cuba, Sudan and Uganda [17-20]. Human-to-human direct transmission is usually through lachrymal secretions or respiratory contamination [21]. Indirect transmission through contaminated ophthalmological device or swimming pool waters has also been described [22].

In Marseille, the population originating from Comoros has been estimated at 50,000 to 70,000 inhabitants, although the precise number is difficult to assess [23]. Therefore, Marseille University Hospital Insitute for Infectious and Tropical Diseases can be used as a sentinel to document outbreaks occurring in south-west Indian Ocean Islands [24].

This new outbreak of acute haemorrhagic conjunctivitis in Comoros, but also in Madagascar and Mauritius raises concerns of local spread in Indian Oceans Islands, as well as of new cases imported from there to Europe. The possibility of an outbreak in Europe and specifically France, given the high contagiousness of the disease cannot be excluded. Strict adherence to hygiene rules is essential for the control of the epidemics. No member of our hospital team has been contaminated in the context of the case described here.

We demonstrate one more time that travellers may act as sentinels to document infectious disease outbreaks in tropical areas where laboratory tools are limited.

* Authors' correction:

The name of Comoros was corrected on 13 June 2012 at the request of the authors.

* * Addendum

The sequence has been deposited in GenBank under accession number JX196594 [added on 2 July 2012].

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