

A case of severe cholera imported from Bangladesh to Italy, 2017

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Dear Editor,

about one year ago we had an experience that brought us to look for and appreciate the interesting paper from Steffen et al (1) about the underestimation of cholera cases in developed countries.

On the evening of 23 October 2017, a 35-year-old man presented to the Emergency Department of a peripheral hospital in the neighbour of Milan (Sesto San Giovanni), Italy complaining of a 3-day history of watery diarrhoea and vomiting preceded by sensation of fever. The patient reported no blood or mucous in the stool. Up to this point his history was not different from many other multiethnic patients waiting in the same room, but there was a particularity, he had just returned (October 22) from his annual family visit to the country of origin (from August 22) in Dhaka, Bangladesh. During the travel he consumed local food and drank tap water as he used to do every visit before and no direct contact with sick individuals was reported. His past medical history was unremarkable and he has been living and working in Italy since 2009. He didn't perceived any at risk behaviour and he did never look for travel medicine consultation before his annual visit to the homeland.

At presentation the patient was alert, afebrile, anuric with evidence of severe dehydration. On admission, blood laboratory analysis showed leukocytosis (white blood cell count of 21,380/ μ L; norm :4,000-10,000/ μ L), haemoglobin 20 g/dL (norm male: 14.2-17.2), haematocrit 64% (norm male: 43-52%), high serum creatinine level (3.08 mg/dL; norm: 0.6-1.40 mg/dL) and severe metabolic acidosis (pH 7.047; norm: 7.35-7.45) with low bicarbonate (10 mmol/L; norm:22-26 mmol/L) and borderline low sodium (135 mmol/L ; norm: 135-145 mmol/L) and potassium (3.5 mmol/L; norm 3,5-5.1 mmol/L). A chest X-ray was normal and an abdomen ultrasound showed bowel distension. Extensive parenteral fluid and electrolyte replacement with a central line was started together with empiric antibiotic therapy with ciprofloxacin (200 mg twice day) and metronidazole (500 mg

every 6 hours). After about 12 hours in the emergency department (ED) where he received sub-intensive care the patient was hospitalized in the local internal medicine ward with contact isolation.

It's interesting to highlight that it took five days from the presentation at ED to the microbiological diagnosis because of the low suspect index. Once that the cholera suspect was formulated the local microbiology department lacked the proper grow medium and the expertise to search for *Vibrio cholerae* and the stool sample had to be transported to the Laboratory of Clinical Microbiology at L. Sacco Hospital where it was plated on Thiosulfate Citrate Bile Salts Sucrose agar (TCBS, Biomerieux, France) and incubated for 24 hours at 37°C. *Vibrio cholerae* was then identified at the species level and tested for antimicrobial susceptibility. Full sensitivity to all standard antibiotics was recorded, according to the European Committee on Antimicrobial Susceptibility Testing (EUCAST). The strain was sent to the Istituto Superiore di Sanità for further typing, and the isolate was confirmed to be *V. cholerae* O1 serotype Inaba.

The case was reported to the Regional Health Authority and the patient was transferred to the Infectious Disease ward at Luigi Sacco hospital when the diarrhoea was almost resolved. He was discharged 6 days later with normal kidney and bowel function. Ciprofloxacin therapy was prosecuted for a total of 10 days due to the concomitant *E. coli* bacteraemia identified on admission. No secondary cases were identified from patient's relatives.

Although cholera remains a significant public health problem worldwide with major outbreaks occurring in Africa, Central America and South-East Asia, it is very infrequently reported among travellers and immigrants [2,3]. For instance, in the GeoSentinel study conducted from 1996 to 2011 to evaluate potentially life-threatening tropical diseases among western travellers no cases of cholera were reported among 3,666 patients [4]. The same GeoSentinel Network in a study from 2007 to 2011 of ill returned travellers (that included also VFRs) reported only 2 cases of cholera out of 3651 patients presenting with gastrointestinal diseases [5]. In a retrospective study performed in France 129 cases of cholera were notified during a 32-years

period (an average of 3.9 cases/year) but with a significant reduction in the period 2000-2005 [6]. A similar pathway is observed in the countries of the European Union where a total of 88 cases were notified between 2010 to 2014 with the lowest mean annual number registered in 2013 and 2014 [3]. Moreover, the rarity of encountering this imported disease is mirrored by the paucity of published cases in the literature in the last 24 years (Table 1). In conclusion, we have described a case of imported cholera diagnosed in Italy in 2017 discussing the clues that should help clinicians to suspect this infrequent and likely underestimate imported disease. This is particularly important because as observed in our case and reported by Tarantola and coworkers diagnosis is increasingly made in nonteaching hospitals [6] where the suspect index for imported disease could be lower.

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Table 1- Single case reports of imported cholera described in Europe and USA from 1994 to 2018

Author/Ref	Year	Sex/Age	Nationality	Category of travel	Country visited	Country of observation	V. cholerae type	Signs & symptoms	Laboratory exams	Dialysis	Antibiotic treatment	Outcome
Emeis/10	1994	F/15	Pakistani	VFR	Pakistan	Germany	O139	Watery diarrhoea, vomiting, shock	Creatinine 4.4 mg/dL; metabolic acidosis (pH 7.21)	No	Tetracycline	Recovery
Leentvar-Kuijpers/11	1995	M/67	NR	NA	Holland*	United Kingdom	O1, El Tor, Ogawa	Watery diarrhoea	NR	No	Tetracycline	Recovery
Dalsgaard/12	1996	F/61	Vietnamese	VFR	VietNam	Denmark	O139	Watery diarrhoea	NR	No	NR	Recovery
Schurmann/13	2002	M/36	Nigerian	VFR§	Nigeria	Germany	O1, El Tor, Inaba	Watery diarrhoea, vomiting, hypotension	Creatinine 5 mg/dL	No	NR	Recovery
Strumbelj/14	2005	M/20	Slovene	Work	Tunisia	Slovenia	Non-O1, non-O139	Diarrhoea, vomiting, fever; liver and spleen abscesses	NR	No	Ampicillin, doxycycline, ciprofloxacin	Recovery
Ciofi degli Atti/15	2005	M/45	Senegalese	VFR	Senegal	Italy	O1, Ogawa	Severe diarrhoea, metabolic acidosis, oliguria	Creatinine 9,5 mg/dL	Yes (1 session)	Ciprofloxacin+ Metronidazole (3 days)	Recovery
Van Furth/16	2006	M/7	Indian	VFR	India	The Netherlands	O1, El Tor, Inaba	Watery diarrhoea, lost of consciousness	NR	No	NR	Recovery
De Schrijver/17	2007	F/62	Belgian	Traveller	Turkey	Belgium	O1, El Tor, Inaba	Severe watery diarrhoea, dehydration, metabolic acidosis, renal failure	NR	NR	Quinolone	Recovery
	2007	F/67	Belgian	Traveller	Turkey	Belgium	O1, El Tor, Inaba	NR	NR	NR	Quinolone	Recovery

Reyes-Corcho/18	2012	M/76	African-American	VFR	Haiti	USA		Watery diarrhoea, severe weakness, dizziness, muscle cramps, nausea, vomiting	Leukocytosis (20,800 / μ L); metabolic acidosis (pH 7.16); low bicarbonate (16 mEq/L); hypokaliemia (3.1 mEq/L); creatinine 2.7 mg/dL	Yes (2 sessions)	Doxycycline 300 mg per os	Recovery
Mascarello/19	2013	M/40	Italian	Traveller	Cuba	Italy	O1, El Tor, Ogawa	Watery diarrhoea, severe weakness, muscle cramps, dizziness, abdominal pain, nausea, vomiting, weight loss (10 kg)	Leucocytosis (16,800 / μ L); creatinine 5.69 mg/dL; low bicarbonate (11.3 mmol/L); hypokaliemia (2.7 mEq/L); metabolic acidosis (pH 7.16)	Yes (1 session)	Ciprofloxacin 200 mg x 2/day for 7 days	Recovery
Sachinwalla/20	2015	M/49	Haitian	VFR	Haiti	USA	O1, Ogawa	Nausea, vomiting, diarrhoea, abdominal pain	Hemoglobin 20 g/dL; Haematocrit 59.8%; creatinine 4.4 mg/dL; leucocytosis (11,500/ μ L)	No	Ciprofloxacin 3 days	Recovery
Slesak/21	2016	M/56	German	Business	The Philippines	Germany	O1, El Tor, Ogawa	Watery diarrhoea, hypotension, weight loss (5 kg), anuria	Normal leucocytes (9860/ μ L); creatinine 4.4 mg/dL	No	Doxycycline 300 mg single dose	Recovery
Pougnnet/22	2018	M/54	French	Traveller	India	France	O1, Ogawa	Diarrhoea, vomiting, shock,	Hemoglobin 20.4 g/dL; Haematocrit	No	Ciprofloxacin	Recovery

								weight loss (10 kg)	57.1%; creatinine 2.57 mg/dL			
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VFR, visiting friends and relatives; NR, not reported; * Likely origin imported frozen coconut milk; § Holiday in Nigeria 12 days before the onset of cholera (not compatible with the incubation period of the disease). Cholera probably contracted by handling a fresh fish imported from Nigeria.

