

Leptospirosis and Weil's syndrome: cause for concern?

In October, 2010, former British Olympic rower Andy Holmes died suddenly from Weil's syndrome. Fatal cases are exceptionally rare in the UK but it was particularly shocking and tragic that an extremely fit, 51-year-old sportsman could die from an infection caught from freshwater in Lincolnshire within days of exposure. Leptospirosis, the underlying bacterial infection that leads to Weil's syndrome, is more common in tropical regions. "Of the 26 laboratory-confirmed cases in the UK so far in 2010, 14 were acquired in the UK and 12 overseas—from locations such as Thailand, the Dominican Republic, and Cambodia—which is fairly typical", comments Robert Smith, clinical scientist at Public Health Wales (Cardiff, UK). With travel to exotic locations and water-based sports activities becoming increasingly popular, should we be more concerned about this syndrome?

"According to recent estimates, more than 500 000 cases of severe leptospirosis occur annually worldwide", notes Mathieu Picardeau (Institut Pasteur, Paris, France). The exact number of infections globally is difficult to establish because many of the countries in which leptospirosis is endemic have limited surveillance and notification systems. "This should improve in the future—currently the Leptospirosis Burden Epidemiology Reference Group, under supervision of WHO, is measuring the true global burden of human leptospirosis and quantifying health outcomes attributable to the disease", says Picardeau.

Georgios Pappas (University Hospital of Ioannina, Ioannina, Greece) points out that the Seychelles has the highest yearly incidence, with 432 confirmed cases per million people, followed closely by many countries in southeast Asia and the Indian subcontinent. "In tropical parts of the world with high poverty levels, leptospirosis remains a common cause of fatal

and non-fatal illness, with major outbreaks associated with heavy rainfall and flooding of urban slums", comments David Haake (UCLA, Los Angeles, CA, USA). Incidence in the USA, Australia, and Europe tends to be lower. "Leptospirosis was a reportable disease in the USA until the late 1970s; the total number of reported cases annually ranged from 51 to 140, and there is no reason to think that incidence has changed significantly since", adds Haake. Occasional large outbreaks do occur—more than 100 cases occurred in association with the 1998 Lake Springfield triathlon in Illinois, USA. Leptospirosis in Europe is predominantly associated with occupational or recreational exposure. "Mainland France has the highest prevalence in Europe with approximately 0.5 cases per 100 000 inhabitants; about 600 cases are diagnosed each year", says Picardeau. Half of these cases occur in French territories (such as Guadeloupe, Martinique, La Réunion, and New Caledonia), where the prevalence is more than 100 times that in mainland France.

"Estimating the prevalence of Weil's syndrome is always difficult, but in general 3–7% of leptospirosis cases proceed to Weil's: mortality again varies depending on medical care provided", comments Pappas. Mortality related to Weil's syndrome in developed countries is low. "Weil's syndrome is also very rare in Australia and deaths even rarer", comments Ben Adler (Monash University, Clayton, VIC, Australia). In 2008, two of the 76 laboratory-confirmed cases in the UK were fatal. Holmes' death is the only recorded fatal case attributed to Weil's syndrome in the UK in 2010.

Leptospira bacteria can be carried and excreted by most mammalian species but especially by cattle and rodents; the bacteria multiply in the kidney tubules and are released in the animals' urine. Specific occupational

hazards are present when people come into contact with the urine or tissues of infected animals (butchers, veterinary surgeons, animal breeders, hunters, and freshwater fish farmers are at highest risk). "In southeast Asia, the monsoon season and flooding of rice farms represents a typical frame for infection of workers in such activities", says Pappas. However, as Picardeau emphasises, indirect exposure, through contact with freshwater or a humid environment contaminated with infected urine is actually more common. "Such indirect exposure is also associated with particular occupations (eg, sewer workers) but is also linked with water sports and military manoeuvres; outdoor recreational activities increase exposure, including swimming and fishing in freshwater, kayaking and rafting, and adventure tourism", he explains. When these take place in tropical regions where leptospirosis is endemic, infection is more likely. "There has definitely been an increase in cases of leptospirosis acquired abroad, particularly among travellers who pursue water-based activities on adventure holidays", adds Picardeau.

Swimming or canoeing in lakes and rivers should always be considered a potential risk factor, when the patient presents 3 days to 3 weeks later with suspicious symptoms. "This was the case in the notorious Malaysian

For more on **Andy Holmes** see <http://www.telegraph.co.uk/news/obituaries/sport-obituaries/8086359/Andy-Holmes.html>

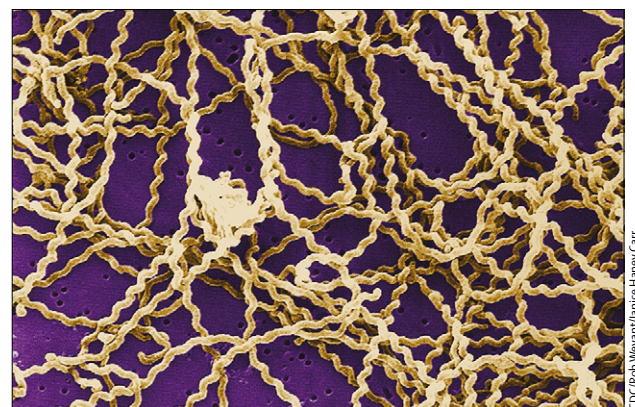
For more on **leptospirosis from the Leptospirosis Information Center** see <http://www.leptospirosis.org/>

For more on **leptospirosis from the Health Protection Agency** see <http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/Leptospirosis/>

For more on **leptospirosis from the National Health Service Choices** see <http://www.nhs.uk/conditions/Leptospirosis/Pages/Introduction.aspx>

For more on **leptospirosis and travellers** see <http://www.nathnac.org/travel/factsheets/leptospirosis.htm>

For more on **specific advice to rowers** see <http://www.britishtrowing.org/news/weils-disease-leptospirosis>



Several strains of *Leptospira* can cause Weil's syndrome

outbreak a few years ago, when over 100 Eco-Challenge multisport race athletes became infected", notes Pappas. The second major means of transmission is contact with rodents, or excessive presence of infected rodents in the environment: cleaning a closed space that has been infected with rodent excrement is often the cause of leptospirosis. "Sometimes, however, the risk is not apparent—one UK case in 2009 occurred in a council worker who was using a pressure hose to wash down pavements after a street carnival; exposure was probably through the mucous membranes via water droplets that picked up contaminated animal urine", reports Smith.

The severity of leptospirosis and its progression to Weil's syndrome is affected by the level of exposure and the strain of *Leptospira* involved. "There are over 250 serovars

worldwide, and some are more virulent than others", adds Smith. Many cases of infection are likely to be dismissed as a mild viral infection or non-specific illness but severe influenza symptoms within a couple of days of freshwater exposure should set alarm bells ringing. "It is most important that patients who become ill after recreational exposure to water should seek medical attention as soon as possible since antibiotic therapy must be given early to be effective", emphasises Haake.

Prevention measures are in place in various parts of the world—a human, serovar-specific vaccine is available in China, Australia, and France—and cattle and dog vaccines help to lower the risk from some animal reservoirs. "It is unlikely that there will be an effective, cross-protective subunit vaccine for leptospirosis for years—if ever", comments Adler. Smith believes

that greater awareness through public health education, specifically aimed at occupational and recreational risk groups is the way forward. Pappas agrees and says that "Travellers, people who participate in sports, and those in specific occupations need to know that immersion in, or ingestion of, freshwater may lead to subsequent leptospirosis", he says. Although there is a recommendation by the Centers for Disease Control and Prevention (Atlanta, GA, USA), backed up by a Cochrane database meta-analysis, the use of doxycycline as a prophylactic might assist in cases when exposure is unavoidable, Pappas does not believe that doxycycline should be suggested to people simply travelling to an endemic area; "You have to be an adventurous traveller to get in contact with it", he states.

Kathryn Senior

Infectious diseases surveillance update

Cholera in Haiti and beyond

As of Nov 9, Haiti's Ministry of Health confirmed 9123 cases of cholera and 583 deaths since the outbreak was first reported on Oct 21. *Vibrio cholerae* has been confirmed in the capital, Port-au-Prince, with 115 suspected cases, and there are reports of the disease spreading to the south and west of the island. One case with symptoms of cholera has also been reported in the neighbouring Dominican Republic. DNA analysis of 13 bacterial samples confirmed that the strain closely matched one that originated in south Asia. Although rumours suggested that UN peacekeepers from Nepal brought the bacterium into Haiti, tests by the Nepal Army have been negative. Hurricane Tomas has hindered control of the epidemic, with Pan American Health Organization and WHO voicing concern for the ongoing spread of the epidemic.

Cases of cholera are on the rise elsewhere, spreading over Africa, Asia, and Oceania. Health authorities have reported suspected cholera in Benin (846 cases, 7 deaths; Oct 25–26), Cameroon (550 deaths; April 1–Nov 1), Chad (4000, 135; October), Ghana (56, 0; Oct 23–Nov 5), Nigeria (37289, 1434; Jan 1–Oct 25; 100 deaths in October), Zambia (14, 2; Oct 26–Nov 1), Zimbabwe (669, 86 confirmed, 16; Oct 1–Nov 8), India (150, 16; Oct 26–28), Pakistan (99, 0; Sept 9–Oct 25), and Papua New Guinea (64, 13; as of Nov 9).

Polio in Africa

As of Nov 9, WHO reported 201 cases of acute flaccid paralysis and 94 deaths from poliomyelitis in Congo (Brazzaville) since early October. Most cases are in individuals older than 15 years. Four cases of imported wild poliovirus type 1 have been confirmed; genetic sequencing

has identified the poliovirus as most similar to that in neighbouring Angola. Congo (Brazzaville) had recorded its last case of indigenous polio in 2000 but immunisation campaigns have not been maintained. High priority is being given to rapid control of persistent transmission, with nationwide vaccination campaigns expected with monovalent oral polio vaccine.

Polio has also returned to Uganda, after the country was declared polio-free in December, 2009. As of Oct 25, the country's health ministry and WHO confirmed cases of the disease, with paralysis in one 2-year-old child. Laboratory tests identified wild poliovirus type 1, believed to be linked to the one isolated in neighbouring Kenya in February, 2009. The health ministry and WHO have announced a vaccination programme for children.

Jessica Greatrex

For more on **cholera in Haiti** see http://promedmail.org/pls/apex/f?p=2400:1001:4460850699045605::NO::F2400_P1001_BACK_PAGE,F2400_P1001_PUB_MAIL_ID:1010,85752

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