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Communicable Diseases WATCH

衛生防護中心 Centre for Health Protection 衛生署 Department of Health

FEATURE IN FOCUS

Human infection of rat hepatitis E virus (HEV)

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The usual HEV causing human infection belongs to *Orthohepevirus A* (HEV-A). Apart from HEV-A, the *Orthohepevirus* genus also has three other species, namely, *Orthohepevirus B* that circulates in chickens, *Orthohepevirus C* (HEV-C) in rats and ferrets, and *Orthohepevirus D* in bats[1,2]. HEV-C, also known as rat HEV, shares only 50% to 60% nucleotide identity with HEV-A. As there is substantial phylogenetic divergence between HEV-A and HEV-C, serologic and molecular tests for human HEV might miss HEV-C infection[2].

Human infection by rat HEV has not been reported previously. The Microbiology Department of the University of Hong Kong (HKU) published their findings of the first report of human case of rat HEV infection in December 2018[2]. In addition, HKU developed a new molecular test to detect this virus in humans.

The patient was a 56-year-old retired male who underwent deceased donor liver transplant in a public hospital on May 14, 2017 and was put on immunosuppressants for anti-rejection prophylaxis. Subsequently, the patient had persistent liver function derangement since mid-July 2017. He was asymptomatic at that time. His blood sample collected on August 22, 2017 tested positive for anti-HEV IgM antibody by the Public Health Laboratory Services Branch (PHLSB) of the Centre for Health Protection (CHP) of the Department of Health which was suggestive of HEV infection. However, the sample was negative for human HEV by molecular testing for HEV-A. Further laboratory investigation by HKU found that the HEV infection was caused by rat HEV.

To study if there were other cases in recent years, CHP provided 73 archived blood samples of patients with positive anti-HEV IgM antibody but negative for human HEV nucleic acid by molecular test to HKU for further testing. Retrospectively, HKU identified that a previously notified HEV case was caused by rat HEV and genetic sequencing results found that the viruses detected in the two cases were highly similar.

The second patient was a 70-year-old retired female with underlying illnesses on immunosuppression. She had developed abdominal pain, headache, anorexia, malaise and palpitation since May 1, 2017, and was admitted to a public hospital on May 4, 2017. She was discharged on May 8, 2017 and had recovered. Her blood sample collected on May 5, 2017 tested positive for anti-HEV IgM antibody by PHLSB.

CHP's epidemiological investigation revealed that the two cases had no travel history during the incubation period of usual HEV infection. They both resided in Wong Tai Sin District and their residence was about two kilometres apart. No other findings suggestive of epidemiological link between the cases were identified. The two patients could not recall having direct contact with rodents or their excreta, or noticed rodents in their residence. However, the first case recalled having seen suspected rodent excreta in his home. Based on the available epidemiological information so far, the sources and routes of infection of these two immunocompromised patients could not be determined.

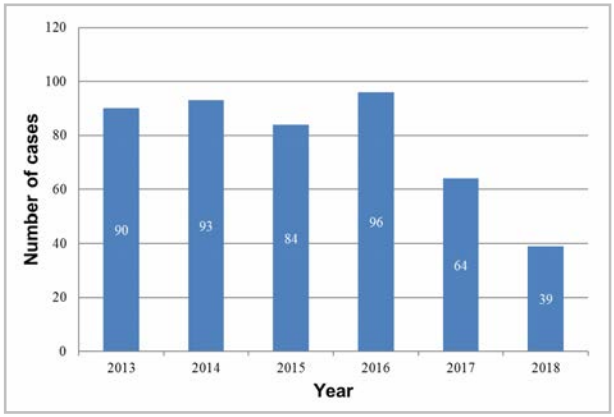

Figure 1 - Number of Hepatitis E cases, 2013 to 2018 (as of November 15, 2018).

Hepatitis E infection is a notifiable infectious disease in Hong Kong and all clinically compatible infection with positive anti-HEV IgM antibody or detectable HEV RNA are classified as a case. In the past five years, the annual number of cases recorded ranged from 64 to 96 (Figure 1). There is no apparent upsurge of hepatitis E infection observed recently among

the notified cases. As of November 15, 2018, a total of 39 cases were reported in 2018. Among all cases since 2013, 381 were local cases, 27 were imported cases and the others were unclassified cases. All were sporadic cases and no clusters were identified.

To enhance detection of human infection of rat HEV, PHLSB has implemented a molecular test targeting different hepatitis E viruses, and will further test those hepatitis E cases confirmed by serology with negative result for the nucleic acid of HEV-A. The Pest Control Advisory Section (PCAS) of the Food and Environmental Hygiene Department (FEHD) has on-going collaboration with HKU's team by providing them tissue samples of rodents for research. As reported in HKU's article mentioned above, the internal organs of a sewer rat (*Rattus norvegicus*) provided by PCAS of FEHD in 2012 tested positive for rat HEV.

The public health implications of the detection of two human infections of rat HEV requires further study. However, the apparent clustering of the two cases back in 2017 is of concern and CHP will continue to closely monitor the situation. The most important preventive measures for the transmission of HEV are food and environmental hygiene, including rodent control. As a new measure, CHP will inform PCAS of FEHD to carry out rodent survey and control measures for all hepatitis E cases that are found to be caused by rat HEV.

To prevent HEV infection, the public is advised to adopt the Five Keys to Food Safety in handling food, i.e. Choose (Choose safe raw materials); Clean (Keep hands and utensils clean); Separate (Separate raw and cooked food); Cook (Cook thoroughly); and Safe Temperature (Keep food at safe temperature) to prevent foodborne diseases. In daily living, they are, to:

- Maintain hygienic practices such as hand washing with safe water, particularly before handling food or eating, and after using the toilet or handling vomitus or faecal matter;
- Obtain drinking water from the mains and boil it before consumption;
- Avoid consumption of water and ice of unknown purity;
- Purchase fresh food from reliable sources. Do not patronise illegal hawkers;
- Clean and wash food thoroughly;
- Cook food, especially seafood (e.g. shellfish), pork and pig offal, thoroughly before consumption. Avoid raw food or undercooked food; and
- Use separate chopsticks for handling raw food and cooked food when having hotpot.

References

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[2]Sridhar S, Yip CCY, Wu S, Cai J, Zhang AJX, Leung KH, et al. Rat hepatitis E virus as cause of persistent hepatitis after liver transplant. Emerg Infect Dis. 2018 Dec. Available at: https://doi.org/10.3201/eid2412.180937.

Regional Symposium on Antimicrobial Resistance

Reported by Dr Jonathan NGAI, Medical and Health Officer and Dr Ken NG, Consultant, Infection Control Branch, CHP

Antimicrobial resistance (AMR) poses a global threat to the sustainable development of human medicine, veterinary medicine and food security by reducing available options to treat and prevent bacterial infections, and the "One Health" approach has been identified as a major element of AMR control and preventive strategies.

On November 13 to 14, 2018, a two-day Regional Symposium on Antimicrobial Resistance was jointly organised by the Department of Health (DH), the Agriculture, Fisheries and Conservation Department, and the Food and Environmental Hygiene Department, calling on healthcare professionals, partners from other sectors and the general public to work together to combat AMR.

Under the theme "Fighting AMR – Partnerships in Action", the Symposium has brought together experts and partners from public health, human and veterinary medicine, agriculture, food, environment and the pharmaceutical industry to review the latest science and gain insights on how to do better in tackling AMR in unity. More than 300 delegates from the western Pacific Region including Hong Kong, Mainland China, Macao, Japan, Singapore and Korea joined the Symposium.

The Symposium aimed to provide a platform for participants to exchange their expertise and experiences and aim to raise awareness of AMR in the community in the Western Pacific region. At the Symposium, world-renowned speakers shared their expertise and experience in translating their AMR action plans into action.

"Stop treating with antibiotics like treats", warned Lord O'Neill, the Honorary Professor of Economics at the University of Manchester and Author of the Review on AMR of the United Kingdom. Lord O'Neill also elaborated on AMR's impact on economy and sustainability upon the plenary lecture. Dr Carmem Pessoa-Silva, the Lead of AMR Surveillance of the World Health Organization (WHO), shared the latest update and development on WHO Global Antimicrobial Resistance Surveillance System. Dr Juan Lubroth, the Chief Veterinary Officer of the Food and Agriculture Organization of the United Nations, discussed the complexity of AMR from animal and food production aspect.

During the symposium, global collaboration and a multi-sectoral "One Health" approach was emphasised. The value of surveillance, efforts in optimising antibiotic use in human and animals, and the impact of infection control and awareness-raising campaigns were discussed while the challenges encountered in new drug development were emphasised by numerous speakers.

The Symposium was one of the major events taking place in conjunction with World Antibiotic Awareness Week (WAAW) 2018 from November 12 to 18. In parallel with WAAW 2018, healthcare professionals are again requested to refer to the guidelines on the use and choice of antibiotics, while patients should strictly adhere to doctors' instructions and should not use antibiotics indiscriminately. For more information on these issues, please visit the WHO's page on WAAW 2018 (http://www.who.int/who-campaigns/world-antibiotic-awareness-week) and page of the DH's Centre for Health Protection (https://www.chp.gov.hk/en/features/100981.html).

Photo 1 - Secretary for Food and Health together with the organisers kicked off the symposium.

Photo 2 - Over 300 delegates from the western Pacific Region attended the Regional Symposium.

Photo 3 - Lord O'Neill delivered the plenary lecture on - Sustainability and economic impact of AMR.

NEWS IN BRIEF

A local sporadic case of listeriosis

On November 4, 2018, the Centre for Health Protection (CHP) recorded a sporadic case of listeriosis affecting a 72-year-old woman with end stage renal failure on continuous ambulatory peritoneal dialysis (CAPD). She had presented with fever, abdominal pain, vomiting, diarrhoea and turbid peritoneal dialysate since November 2 and was admitted to a public hospital on the same day. Her peritoneal dialysate collected on November 2 grew *Listeria monocytogenes*. The clinical diagnosis was CAPD peritonitis and she was treated with antibiotics. She was stable and discharged on November 16. She had no recent travel history. She did not recall consuming any high risk food during the incubation period. Her household contacts remained asymptomatic.

A sporadic case of psittacosis

On November 6, 2018, CHP recorded a sporadic case of psittacosis affecting a 56-year-old female with underlying illnesses. She had presented with fever, sore throat, cough and runny nose since October 20. She attended the Accident and Emergency Department (AED) of a public hospital and was admitted for management on October 24. Her chest X-ray showed left middle zone haziness and the clinical diagnosis was pneumonia. Her sputum collected on October 24 was tested positive for *Chlamydia psittaci* DNA by polymerase chain reaction (PCR). She was treated with antibiotics. She remained stable and was discharged on October 27. She had no recent travel history. She did not recall direct contact with birds, bird droppings or bird carcasses during the incubation period. Her home contacts remained asymptomatic.

A sporadic case of *Streptococcus suis* infection

On November 9, 2018, CHP recorded a sporadic case of *Streptococcus suis* infection affecting a 71-year-old man with good past health. He had presented with fever, dizziness and nausea since November 8. He attended the AED of a public hospital and was admitted on November 8. The clinical diagnosis was sepsis. His blood culture was tested positive for *Streptococcus suis*. He was treated with course of antibiotics and his condition remained stable. He had history of handling raw pork at home during incubation period but did not have wounds on hands. He had no travel history during the incubation period. His home contacts remained asymptomatic.

CA-MRSA cases in October 2018

In October 2018, CHP recorded a total of 115 cases of community-associated methicillin resistant *Staphylococcus aureus* (CA-MRSA) infection, affecting 69 males and 46 females with ages ranging from two months to 94 years (median: 35 years). Among them, there were 93 Chinese, 5 Caucasian, 5 Nepalese, 4 Filipinos, 2 Pakistani, 1 Indian, 1 Indonesian, and 4 of unknown ethnicity.

One hundred and fourteen cases presented with uncomplicated skin and soft tissue infections while the remaining case had severe CA-MRSA infection. The severe case affected a 22-year-old man who presented with fever and right buttock pain since October 10. He attended the AED of a public hospital on October 15 and was admitted on the same day. The clinical diagnosis was right buttock abscess with bacteremia. He was treated with incision and drainage of right buttock abscess and antibiotics. Blood specimen and pus collected from his right buttock abscess on October 15 were both cultured positive for CA-MRSA. He remained in a stable condition.

Separately, the isolates of two cases were found to be resistant to mupirocin. The first case involved a five-year-old boy who presented with boils on his right leg in mid-September and recovered after antibiotic treatment. The second case involved a 91-year-old woman who had right scalp abscess in early October. She was treated with antibiotics and surgical drainage. Her condition remained stable.

Besides, six household clusters, with each affecting two persons, were identified. No cases involving healthcare worker were reported in October.

Scarlet fever update (October 1, 2018 – October 31, 2018)

Scarlet fever activity has increased in October. CHP recorded 162 cases of scarlet fever in October as compared with 97 cases in September. The cases recorded in October included 95 males and 67 females aged between nine months and 52 years (median: six years). Among them, there was a case requiring admission to paediatric intensive care unit (PICU). This case affected a 13-year-old boy with underlying illnesses. He presented with fever, sore throat and sandpaper-like rash over body since October 20. He was admitted to a public hospital and subsequently transferred to PICU for further management because of shock on October 21. The clinical diagnosis was scarlet fever with toxic shock syndrome. He was treated with antibiotics. His condition was stabilised and he was discharged on October 28. There were six institutional clusters occurring in three kindergartens/child care centres, two primary schools and a special school, affecting 14 children in total. No fatal cases were reported in October.