

Reemergence of Sexually Transmitted Antimicrobial Resistant Shigellosis in Men Who Have Sex with Men

Yuan-Ti Lee^{1,2,3*}, Shiuan-Chih Chen^{1,2,4} and Chi-Ho Chan^{1,2,5,6}

¹Institute of Medicine, Chung Shan Medical University, Taichung 40201, Taiwan

²School of Medicine, Chung Shan Medical University, Taichung 40201, Taiwan

³Division of Infectious Diseases, Department of Internal Medicine, Chung Shan Medical University Hospital, Taichung 40201, Taiwan

⁴Department of Family and Community Medicine, Chung Shan Medical University Hospital, Taichung 40201, Taiwan

⁵Department of Microbiology and Immunology, Chung Shan Medical University, Taichung 40201, Taiwan

⁶Institute of Microbiology and Immunology and School of Medicine, Chung Shan Medical University, Taichung, Taiwan

Shigellosis is an acute gastrointestinal infection. *Shigella* has no reservoir in nature and the transmission of this disease is virtually always from one person to another. The normal routes of transmission for infectious gastrointestinal diseases are food contamination or/and oral-fecal contact [1]. Since the 1970s, shigellosis has also been reported as a sexually transmitted infection (STI) in men who have sex with men (MSM) due to unprotected sexual activity [2]. Recently, epidemiological data has shown that MSM have tended to get the sexually transmitted form of these diseases at much higher rates than the general population [3].

A disease that was not transmitted sexually may become one that is. For example, a few years ago in countries such as the USA, England and Wales and Australia, shigellosis was found within the MSM community who were infected with HIV [4-7]. There is an ongoing *Shigella flexneri* (*S. flexneri*) serotype 3a prolonged MSM-associated outbreak in England and Wales which began in 2009 [7]. Shigellosis now appears to have become a worldwide problem [2]. We have recently seen data of communicable diseases from the Taiwan Centers for Disease Control and Prevention. The number of the cases related to the sexual transmission such as acute hepatitis A and C, *Entamoeba histolytica* and shigellosis increased within the MSM community [8-13]. In Taiwan from 2005 to 2014, there was a low shigellosis incidence rate (0.7/100,000 persons) [8]. However, between June 2015 and May 2016, out of 200 shigellosis cases in northern and central Taiwan, there were 21 HIV infected patients who domestically acquired infections of *S. flexneri* 3a. All 21 patients were men, 22-44 years of age, including 17 openly admitted MSM [13]. The concern is that what is now mainly limited to MSM infected with HIV, may spread to the general population and be transmitted through non-sexual means again.

Diarrhea is a common problem in individuals infected with HIV. It seems that a combination of antiretroviral therapy and certain behaviors have been changing the nature of infectious and noninfectious diarrhea in these individuals [14]. In a British study, certain behaviors were associated with the disease, such as having unprotected sex with a high number of partners, casual sex obtained through social media sites, and drug abuse (such as with crystal methamphetamine) which contributes to irresponsible sexual behavior [15, 16]. Another factor is that HIV positive people are far more susceptible to the *S. flexneri* infection than others [17]. Taiwan has the same risk factors related to the disease and is following the same pattern as Britain, only a few years later [6, 18]. What is happening in Taiwan now with the disease seems to have the same risk factors as in Britain, only happening a few years later.

A big concern now is that it will become increasingly difficult to treat Shigellosis due to antibiotic resistance [19, 20]. Ciprofloxacin is the current drug of choice for treatment and it is becoming less and

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less effective over time [1,20]. Several previous reports stated that there is a worldwide spread of ciprofloxacin-resistant *Shigella sonnei* (*S. sonnei*) among HIV-infected MSM [13,21,22]. This was not the case in Asia. However, between March and May 2015, nine ciprofloxacin-resistant *S. sonnei* infections occurred among HIV-infected MSM within Taiwan, unassociated with foreign travel [13]. On an ominous note, azithromycin resistant *S. flexneri* 3a strains have been found in Taiwan already, mostly in HIV-infected MSM [2,18,23]. They were already spreading in Europe, Australia and North America and it is probable they were brought to Taiwan due to sexual transmission during foreign travel [2,23,24].

In conclusion, the reemergence of antimicrobial resistant Shigellosis as a sexually transmitted infection is a growing concern. It is primarily associated with HIV-positive MSM having unprotected sex with direct oral-anal contact. Chemsex drug use can compound the problem. Due to the fact that some patients are asymptomatic carriers, it is unlikely that doctors will test for Shigellosis. We suggest that, in addition to the other tests for sexually transmitted diseases normally performed on these patients, testing for Shigellosis should be added. This would be much easier if there were a more rapid test than culturing. Of especial concern is the rise of antimicrobial resistance internationally due mainly to sexual transmission. In high prevalence areas in South-east Asia, fluoroquinolone resistant *Shigella* species are not predominantly transmitted sexually [13]. However, in low prevalence areas, it is likely that resistant strains are being transmitted sexually.

Competing Interests

The authors declares that they have no competing interests.

Corresponding Author: Dr. Yuan-Ti Lee, Institute of Medicine, Chung Shan Medical University, #110, Section 1, Jianguo N. Road, Taichung 40201, Taiwan, E-mail: leey521@gmail.com

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