Epidemiology of the 2014/2015 Epidemic of Foot-and-mouth Disease in Korea

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After the end of huge epidemic of FMD from November 2010 to April 2011, the Republic of Korea was recognized as a foot and mouth disease (FMD) free country with vaccination at the general meeting of OIE held in May 2014 in Paris. This approval was obtained after proving no-circulation of FMD virus for more than one year. However, on 23 July 2014, animals in suspicion of infection were notified from a pig farm, and FMD was confirmed on the next morning. Subsequent FMD cases were diagnosed in two other farms by 6 August 2014. Four months later (3 December 2014), a veterinarian observed vesicles and ataxia on pigs, and reported to the county office. During the following 147 days until 28 April 2015, 180 pig farms and 5 cattle farms were confirmed with FMD.

Detailed prevention and control measures on FMD in Korea were stipulated by the Act on the Prevention of Contagious Animal Diseases, the FMD Control Guidelines, and the standard operation procedure for FMD. These regulations include notification of suspected cases, movement control, stamping-out, disinfection, vaccination, import quarantine, disposal, compensation, and penalties.

In case of FMD outbreak, the veterinary epidemiology division of the QIA takes overall responsibility for the epidemiological investigation. For every infected farm and farm with animals in suspicion, field investigation and contact tracing were performed. All the animals, people, vehicles and materials that moved to/from those premises during 21-days before the report were traced for each farm. Then, the forward-and-backward tracings were conducted for every farmer, worker, and visitor associated with the farms.

The pathways of the virus transmission between farms in other counties were able to be categorized into; (1) Visits by vehicles (or drivers) that contaminated from abattoirs; (2) Visits by vehicles (or drivers) to numerous farms; (3) Distribution of infected animals to other farms; (4) Distribution of feed from a large commercial feed factory to farms in various provinces; and (5) Operation of two and more farms located in different provinces by one person (or members of the same family or an affiliated company). Delivery of veterinary pharmaceuticals, semen for artificial insemination, and manure were associated with transmission within the same county or province. FMD outbreaks continued for a long time because of the following reasons: (1) The virus continued to replicate within farm where animals were partially slaughtered, (2) Regional level of FMD-vaccine antibody was fluctuating, resulting in continuous circulation of the virus between farms in different regions, (3) Outbreaks began in December, at the beginning of winter, when the conditions were favorable for virus survival, and (4) Control measures were not implemented at proper time because farmers declined to report suspected cases. In fact, failure of early detection due to the reluctance of reporting underlined the importance of public education on FMD.

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