Poster Presentation (PF-9)

Seroprevalence of H5N1 Avian Influenza Subtype in Backyard Duck at Kampung Unggas Teruwai on Central Lombok District

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INTRODUCTION

Avian influenza is one of the zoonotic diseases. Since 2003, H5N1 Avian Influenza subtype was circulated in Indonesia, affecting both intensively farmed birds as well as backyard chickens [1]. Duck is the reservoir of avian influenza viruses. Backyard duck may play a role in the maintenance of H5N1 avian influenza subtype.

Kampung Unggas that located in Teruwai Village on Central Lombok District is one of the economic centers of a farmer on Lombok Islands and The Avian Influenza Virus is still the major problems in this village. H5 Avian Influenza was detected in quail at Central Lombok district in 2014 [2]. In 2017, Sentinel chicken were positive antibodies for H5 AIV with Geometric Mean Titer (GMT) = $2^{4,29}$ at Kampus Unggas Teruwai [3].

To know seroprevalence of H5N1 Avian Influenza subtype in duck as a reservoir and to understand the current situation of H5N1 Avian Influenza virus circulation in Kampung unggas, we conducted serosurvey study from Mei to April 2018 of backyard duck that lives together with chickens in Kampung Unggas.

MATERIALS AND METHODS

A Descriptive observational survey with purposive sampling method at 5 selected locations based on interviews of farmers in Teruwai villages was conducted during Juni 2018. Location 1 at 8°48'41.7"S 116°18'51.5"E, Location 2 at 8°48'47.7"S 116°18'43.3"E, Location 3 at 8°48'50.7"S 116°18'42.5"E, Location 4 at 8°50'10.3"S 116°17'48.9"E, and Location 5 at 8°50'10.4"S 116°17'49.0"E

Fifty blood samples were collected from the wing vein of backyard duck (unvaccinated, mature, and healthy chickens) at 5 selected location. Samples were transported to the Animal teaching hospital laboratory of the Faculty of Veterinary Medicine, Nusa Tenggara Barat University within 24 h using the cool box. If a delay in sample transportation was expected, samples were centrifuged and frozen at -20 °C before being submitted to the laboratory.

Antibodies against H5N1 avian influenza virus clade 2.1.3 (PUSVETMA, Surabaya) present in the serum were evaluated using the hemagglutination inhibition (HI) assay according to OIE manual procedure. The HI assay was performed using 96 'U'-well microtiter plates, dilution in PBS, 1 % v/v red blood cells (RBC), and 4 HA units of AIV antigen [4]. The data of antibodies against H5N1 avian influenza virus from sentinel chickens were analyzed using Geometric Mean Titer (GMT).

RESULT AND DISCUSSION

Samples were considered negative if titers were ≤8. Positive flocks had at least one serum sample with a titer > 8 [5]. Overall seroprevalence was recorded as 13.6% that were seropositive antibodies against H5N1 avian influenza virus clade 2.1.3 with Geometric Mean Titer (GMT) = $2^{5.65}$ of 50 collected sera samples from backyard ducks. The highest (3 %) prevalence was found at location 5 and the lowest (0%) was found in location 4

The result of antibodies titer against H5N1 avian influenza virus clade 2.1.3 using the hemagglutination inhibition test are summarized in Table 1.

Table 1. Antibodies titer against H5N1 avian influenza virus of each location

Location	Number of samples	Positive (%)	*Geometric Mean Titer* (GMT)
Location 1	11	1 (9.09)	2^6
Locati2n 1	9	1 (9.09)	2^6
Location 3	10	2 (20)	2^6
Location 4	10	0 (0)	0
Location 5	10	3 (30)	$2^{4,6}$
Total	50	7 (13.6)	$2^{5.65}$

Four location were positive antibodies against H5N1 avian influenza virus clade 2.1.3 of backyard ducks (unvaccinated, mature, and healthy ducks) of 5 selected location with lower prevalence indicated that the backyard ducks can be a reservoir of H5N1 avian influenza because of the duck resistant from H5N1 avian influenza. Barber et al [6] reported that the Ducks are often resistant to influenza viruses capable of killing chickens because duck has retinoic acid-inducible gene 1(RIG-I), this gen was presented in ducks and

plays a role in clearing an influenza infection. So, The backyard ducks potential to spread H5N1 avian influenza virus because their excretions and secretions that containing H5N1 avian influenza can infect others poultry. The previous study explained that presence of both SAα2,6-Gal and SAα2,3-Gal receptors in many organs of both chickens and ducks [7], That means the avian influenza viruses from duck can infect the other poultry by fecal-oral route or aerosol. Fecal-oral route transmission was reported that H5N1 Avian influenza Subtype was detected in a Bengawan solo river in sentinel duck from fecal sample [8]. Also, the mode of aerosol transmission of avian influenza was simulated which has obvious implications for pandemic influenza planning [9]. There are three ways of transmitting Influenza Virus; aerosol, a droplet of big size, and direct contact with secretion or excretion. These secretions are possibly carried out along with Influenza Virus through water and they captured by a duck as reservoir animal.

CONCLUSION

The lower seroprevalence rate (13.6%) of H5N1 Avian Influenza subtype in backyard duck was indicated that backyard duck can be a reservoir of H5N1 avian influenza subtype and they can spread that viruses to other animals, environment dan human in Avian Village of Teruwai Village on Lombok Island.

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