

Potential Animal Carriers Rabies (HPR) Suspect Arriving from Java to Sumatera

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INTRODUCTION

Rabies is a high risk zoonotic disease caused by Lyssavirus, this disease also categorized as strategic infectious animal disease in Indonesia. During whole 2016 and 2017, Cilegon Class II Quarantine Station have performed serology screening tests using Rabies ELISA kit produced by Veterinary Pharma Center (Pusvetma) in order to detect Rabies Antibody in dogs that crossed Cilegon Class II Quarantine Center during their transportation from West java to Sumatera. Pusvetma Rabies ELISA kit can differentiate between positive or negative results from dog's blood serum.

Most of the dogs were originated come from Sumedang and Garut area in West Java, and they sent to Sumatera to be trained as Hunting Dogs. The Indonesian Quarantine regulation stated that these transported dogs must get Rabies vaccination at least 2 weeks before transportation and have a health certificate signed by veterinarian officials from local veterinary service. Based on Annual data of Rabies ELISA serology tests from Cilegon Class II Quarantine Station, during 2016 there were 7.04% seropositive and 92.96% seronegative from 2191 serum samples. While during 2017 there were 16.89% seropositive and 83.11% seronegative from total 2273 serum samples. Data from Ministry of Health stated that during 2016 there were 1 case of lyssavirus

infection in west java, 9 in North Sumatera, and 6 in West Sumatera. During 2017 there were 0 case of Lyssavirus infection in West Java, 4 in North Sumatera, and 5 in West Sumatera.

MATERIAL AND METHODS

This paper based on primary data on 2016 and 2017 Rabies ELISA tests from Cilegon Class II Quarantine Station. Secondary data based on Ministry of Health annual report from 2016 and 2017 for Rabies case of dog between origin area (West Java) and receiving areas (West and North Sumatera). Both primary and secondary data were analyzed based on annual case of positive lyssavirus infection from dog's bites on human population.

RESULTS AND DISCUSSION

Rabies serology test is a routine screening test that must be performed by quarantine officers for trans-island dogs from Java to Sumatera islands. Serology tests are using antibody detecting indirect ELISA kit with whole inactivated rabies virus strain Pasteur 35321 as antigen coating, provided by PUSVETMA Surabaya. This Rabies ELISA kit can differentiate between seropositive and seronegative serum from dogs, results from 2016 and 2017 serology tests were mention on table 1.

Table 1, 2016 and 2017 Annual Rabies ELISA test results in Cilegon Quarantine Station

| No | Month | Received Samples | | Tested Samples | | Positive Results | | Negative Results | |
|---|-----------|------------------|------|----------------|------|------------------|--------|------------------|--------|
| | | 2016 | 2017 | 2016 | 2017 | 2016 | 2017 | 2016 | 2017 |
| 1 | January | 172 | 254 | 172 | 254 | 3 | 29 | 169 | 225 |
| 2 | February | 203 | 215 | 203 | 215 | 16 | 17 | 187 | 198 |
| 3 | March | 182 | 248 | 182 | 248 | 16 | 15 | 166 | 233 |
| 4 | April | 161 | 230 | 161 | 230 | 4 | 17 | 157 | 213 |
| 5 | May | 204 | 206 | 204 | 206 | 9 | 58 | 195 | 148 |
| 6 | June | 175 | 159 | 175 | 159 | 11 | 29 | 164 | 130 |
| 7 | July | 156 | 221 | 156 | 221 | 5 | 76 | 151 | 145 |
| 8 | August | 205 | 240 | 205 | 240 | 10 | 40 | 195 | 200 |
| 9 | September | 209 | 225 | 209 | 225 | 12 | 52 | 197 | 173 |
| 10 | October | 232 | 252 | 232 | 252 | 39 | 53 | 193 | 199 |
| 11 | November | 218 | 237 | 218 | 237 | 9 | 56 | 209 | 181 |
| 12 | December | 240 | 248 | 240 | 248 | 32 | 20 | 208 | 228 |
| Annual Total Count | | 2357 | 2735 | 2357 | 2735 | 166 | 462 | 2191 | 2273 |
| Annual Positive and Negative Results Percentage | | | | | | 7.04% | 92.96% | 16.89% | 83.11% |

The table described some increased Rabies ELISA positive results from 7.04% in 2016 to 16.89% in 2017, along with decreased negative results from 92.96% in 2016 to 83.11% in 2017. Research results from Mathews and Derbyshire 1984, in their stated that vaccinated dogs still have positive results of antibody even after more than 1 year after vaccination. Indonesian Quarantine Laws also obligate that transported dogs between islands require Rabies Vaccination at last 2 weeks before transportation – which could be detected as positive antibody in Rabies ELISA test.

Pusvetma Rabies ELISA kit could define between positive and negative results from transported dog's antisera, medium to high titre mean positive results and medium to low mean negative results. These facts lead to conclusion that positive antibody results from ELISA could be result from vaccination, while negative result came

from non vaccinated dogs. Based on these datas from 2016 to 2017, increased rabies ELISA positive result percentages could lead to more dogs vaccinated in 2017 than in 2016 before they getting transported.

Indonesian Ministry of Health regularly published annual report of Indonesian Health Profile, a yearly report of health situation on all 34 provinces in Indonesia, zoonotic disease such Rabies also included on this report. Based on Ministry of Health 2017 report, there were decreased number of Rabies cases from 2016 to 2017 between West Java (Rabies origin area), and North and West Sumatra (Transported dogs receiving areas). Combination of Rabies situation from Ministry of Health and Rabies ELISA serology tests from Cilegon Quarantine Station showed on table 2.

Table 2, Rabies Situation on Transported Dogs Origin Area and Receiving Areas in Indonesia

| No | Area Description | Data | 2016 | 2017 | Potential Impact |
|----|--|---|-------|-------|-------------------|
| 1 | West Java (Transported Dogs Origin Area) | Bite Cases from Rabies Carrier Animals to Human | 554 | 470 | 15.16 % decreased |
| | | Anti Rabies Vaccine for Human Bite Victims | 213 | 304 | 42% increased |
| | | Rabies Positive Infected and Deceased Human | 1 | 0 | 100% decreased |
| 2 | Cilegon Quarantine Station | Received Antisera Samples | 2375 | 2735 | 13.1% increased |
| | | % ELISA Positive Samples | 7.04 | 16.89 | 9.85% increased |
| | | % ELISA Negative Samples | 92.96 | 83.11 | 9.85% decreased |
| 3 | North Sumatra | Bite Cases from Rabies Carrier Animals to Human | 3881 | 1611 | 58.4% decreased |
| | | Anti Rabies Vaccine for Human Bite Victims | 2911 | 1231 | 42% decreased |
| | | Rabies Positive Infected and Deceased Human | 9 | 4 | 55.5% decreased |
| 4 | West Sumatra | Bite Cases from Rabies Carrier Animals to Human | 4351 | 3806 | 12.5% decreased |
| | | Anti Rabies Vaccine for Human Bite Victims | 2992 | 2440 | 18.4% decreased |
| | | Rabies Positive Infected and Deceased Human | 6 | 5 | 16.67% decreased |

Combined data on table 2 showed positive potential impact for vaccinated transported dogs from West Java to North and West Sumatra, where vaccination program have performed in Origin Area during 2016 to 2017. More vaccination program established mean increased ELISA positive results, and also mean decreased Rabies bite cases on human.

CONCLUSION

Seropositive result of Rabies antibody came as prolonged effect of Rabies Vaccination. As annual seropositive results increased, the lyssavirus infection case decreased both in origin area (west Java) and also in receiving areas (North and West Sumatra). Vaccination program on origin area will have positive results for human

population on receiving areas.

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