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DCC 616.959

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Papaya Papain (Carica papaya L.) as A Natural Rodenticide for Mice Control

Vektora Volume 10 Number 2, October 2018, Pages 83 - 90

Rats as reservoirs of Rats are reservoir of some zoonotic diseases. Rodenticides are commonly used for control of rats. They can be extremely harmful to humans and do not only kill rats and other rodents, but also kill their predators. Rat control using Therefore, using natural rodenticide may be a better alternative. Rodenticides could result in negative outcome. An alternative of natural rodenticide is, therefore, needed. This study was aimed to make a proportion of natural rodenticide appropriately to control of mice with papain as active ingredient to obtain an appropriate natural rodenticide, i.e. a formulation of papaya fruit papain (Carica papaya L.) on mice. A quasi-experiment with post-test only with control group design was used in the study. There were four treatments used in this study i.e. treatment formulations of the rodenticide consisted of Formulation A (papain 16% papain”x”), B (papain 24% papain”x”), C (papain 32% papain”x”), and D (papain 40% papain”x”). Mice feed consist of corn, wheat, soy, caramel, papain product for the brand “X” (consist of papain, salt, sugar), paraffin, corn oil and refined sugar. Each was mixed with corn, wheat, soy, caramel, paraffin, corn oil, and refined sugar. Rodenticides given to mice for 7 days, feed intake and death of mice were observed every day. The results showed that mice death were decreased in concomitant with increasing the concentration of papain product for the brand “X”, after rodenticide treatment. There is a significant difference in mortality rate of mice among various rodenticide formulations (p-value<0.05), with the most significant differences in treatment A and D. Feed proportion which contains papain product for the brand “X” 40% can be used as an alternative to make natural rodenticide with the highest mortality. All groups of mice were fed for seven days. Dietary intake and death of mice were observed daily. The results showed that the dietary intake decrease during the study. The number of death increased with the increasing papain”x” concentration. There were significant differences in mortality rate among rodenticide formulations (p=0.000). Using post-hoc test, a significant difference was observed between formulation A and D. Giving the highest mortality and the fastest death time, the formulation that contains 32% papain can be used as an alternative as natural rodenticide.

Keywords : natural rodenticide, papaya papain, mice
Leptospirosis is a zoonotic disease caused by Leptospira. Leptospirosis is a public health problem throughout the world, including in Indonesia. The case of leptospirosis in Tangerang District in 2015 was increased where the most cases located in the area of Puskesmas Kronjo. Environmental factors affect the spread of leptospirosis disease one of the biotic factors. The aim of the study to analyze the relationship of biotic environmental factors to the incidence of leptospirosis in Tangerang Regency. The research was conducted by cross-sectional with location observation approach, and observation by questionnaire of biotic environment of resident’s house. The number of house samples for biotic environmental inspection were 35 houses. The data collected includes the presence of pets at home, and plants around the house. Data on the success of rat catching was done by catching rat at the site. Data were analyzed descriptively and bivariate analysis. The results showed that vegetation (OR = 1.103, 95% CI = 0.987-1.234, p = 0.579) and pets (OR = 0.567; 95% CI = 0.47-6.895; p = 0.653) were statistically unrelated to the incidence of leptospirosis. The high trap success at the study site may be a potential risk for leptospirosis events.

Keywords : pets, rats, vegetation, leptospirosis, biotic
evaluation study noted that MDA implementation not only tablet distribution, MDA implementation until supervision of tablet consumption. This study strongly recommends to use of molecular xenomonitoring for post-MDA surveillance for assessment vector Filariasis Lymphatic capacity.

Keywords : Limphatic Filariasis, MDA, Pekalongan, Vector

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A New Record on Fruits Bats (Macroglossus sobrinus) as A Leptospirosis Reservoir From Indonesia

Vektora Volume 10 Number 2, October 2018, Pages 105-112

Epidemiologically bats are important sources of leptospirosis transmission because of their size, abundance, distribution, and their connectivity with domestic animals. The aim of research was indentifying the kind of fruit bats that positive pathogen leptospira in Wonogiri, Central Java and Muaro bungo, Jambi. This research was a descriptive study with a cross-sectional design. The study was conducted from February to March 2017. The identification of bats by morphological and morphometric characteristics and detection of Leptospira in bats was conducted by means of PCR technique. Results showed 68 caught bats consisting of 7 genera and 11 species. Bats that detected positive Leptospira were 8 bats consisting from 3

species (Macroglossus sobrinus, Cynopterus brachyotis and Eonycteris spelaela). The Macroglossus sobrinus is detected positive leptospira as new records in the world, especially Indonesia.

Keywords:  Leptospirosis, Leptospira, Bats

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Leptospirosis Case Finding for Development of Leptospirosis Surveillance in Semarang City, Central Java, Indonesia

Vektora Volume 10 Number 2, October 2018, Pages 113-118

Leptospirosis is endemic in some parts of Indonesia territory. This work aimed to find the leptospirosis cases in Semarang city, one of the endemic leptospirosis in Indonesia by both active and passive case findings. The leptospirosis was screened in the community base active case finding. In addition, the cases were passively
found in primary health care center and hospitals using a WHO-SEARO criteria and laboratory confirmation test. There were 191 cases detected with WHO-SEARO criteria, and among those cases only 31 cases (3 from active finding and 28 from passive finding) confirmed by laboratory test, either by using Rapid Detection Test (RDT), Microscopic Agglutinations Test (MAT) or Polymerase chained reaction (PCR). Fever, headache and myalgia were the most common symptoms experienced by >90% patients. Based on an active case finding that no more than 21.4% (3/14) probable leptospirosis was detected in this study, meanwhile there was passively 15.8% (28/177) cases confirmed. It was concluded that leptospirosis case finding is still challenging in the endemic area, Semarang city. The application of WHO-SEARO criteria as diagnostic tool may be need to be further evaluated.

Keywords: Leptospirosis, Surveillance, Case finding, passive, active

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Vektora Volume 10 Number 2, October 2018, Pages 119-126

The number of dengue haemorrhagic fever (DHF) cases tend to increase and potentially dengue outbreak encourage the Semarang City Government to issue local policy was Local Regulation number 5 by 2010 on DHF control, which aims to realize coordinating DHF and integrated cooperation with various parties, including the community. The aim of this study to evaluate the implementation of local regulation number 5 of 2010 concerning Control of DHF. The evaluation method this study was qualitative method using policy analysis triangle framework covering context, content, actors and process. Context of the Local Regulation on the DHF control was a health field with the policy actors are government, community and stakeholders. The content of this regulation covers the roles, rights and obligations of each policy actor, DHF control including prevention cases and outbreak and sanctions for community and officials. Regulation implementation till 2015 reached 22.6% from 177 villages. The free number of larvae tends to decrease, but incidence rate (IR) decreases too, case fatality rate (CFR) fluctuates. Sanctions mechanisms have not yet been implemented and cross-sector and community cooperation isn’t optimal. More intensive socialization both cross-sector and community should be utilizing health surveillance officers (Gasurkes) in accordance with their respective working areas.

Keywords: implementation, policy, controlling, DHF

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The Relation of knowledge About Brucella Infection and Demograhpic Factors of Farmers Against Behavior
Brucellosis is an infectious disease transmitted from livestock, especially dairy cattle, to humans, caused by bacteria Brucella sp. Brucellosis causes undulant fever and reproductive disorders in humans with a low mortality rate. The majority of dairy farmers do not know that brucellosis can spread to humans. Washing hands is one of biosecurity steps to ensure animal and human health and to prevent brucellosis. The research aims to uncover the influence of the knowledge of brucellosis in humans, the level of education, the duration of working, the history of fever, and age on the habit of washing hands after contact with dairy cow. The number of respondents was based on proportional test, 18 workers as being selected based on an inclusion criteria. They were given closed questionnaire containing questions on the knowledge of human brucellosis, demographic data and washing hand after contact with dairy cow. The results show that only 33.3 % of respondents know about human brucellosis, 66.7 % of respondents do not know that brucellosis can infect human. As many as 61.1 % of the respondents did not wash their hands after contact with dairy cows. Variables of age, the duration of working in dairy farm and the history of fever have p < 0.02. Conclusion: variables of age, the duration of working in dairy farm and the history of fever are associated with behavior washing hand after contact with the dairy cattle.

Keywords: Human brucellosis, dairy cattle, washing hand

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Risk Factors of People Behavior in an Outbreak of Leptospirosis in Kebumen Regency 2017

Vektora Volume 10 Number 2, October 2018, Pages 135-142

In 2017, Kebumen District Health Office reported that there has been an outbreak of leptospirosis. Data obtained from Kebumen District Health Office in January-April 2017, total number of cases of leptospirosis as many as 60 cases (40 Positive RDT and with 6 people died (CFR = 10,00) . The purpose of this study to determine the relationship between behavioral factors people with leptospirosis incidence and risk factor scale in Kebumen District. The study used an deskriptivel analytic study with case control design The cases were all leptospirosis patients diagnosed clinically with leptospirosis symptoms and laboratory confirmation (+) recorded in the District Health Office Kebumen during the period of January-March 2017, and live in the sub-district with the highest case Control is neighbor of leptospirosis patient who has never suffered from leptospirosis and never experienced symptoms of leptospirosis symptoms The sample in this study amounted to 42 people. Sample taking using Purposive Sampling method. Data analysis using Chi Square test and Odds Ratio (OR) calculation with 95% significance level. This study indicate that the variables associated with leptospirosis occurrence are variables to the barefoot yard (OR = 0,25; 95%), activity in the rice field (OR = 0,16;95%), and if any open wound is not closed (OR = 0,12; 95%). It is necessary to counsel people to wear footwear when they are laughing / yard and cover open wounds with plaster to prevent leptospira bacteria from entering the body.

Keywords: Risk Factors, Behavior, Leptospirosis, Kebumen
Rodentisida Nabati Papain Pepaya (Carica papaya L.) sebagai Alternatif Pengendali Mencit

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Tikus merupakan reservoir beberapa penyakit yang bersifat zoonosis. Pengendalian tikus dengan rodentisida sintetik banyak menimbulkan dampak negatif. Diperlukan alternatif penggunaan rodentisida nabati yang ramah lingkungan. Kombinasi papain dan garam dapat menimbulkan kematian pada mencit dengan lebih cepat. Tujuan penelitian adalah untuk membuat proporsi yang tepat rodentisida nabati dengan bahan aktif papain dengan terhadap mencit sebagai hewan coba. Desain penelitian adalah quasi eksperimen dengan rancangan post-test only with control group design. Rodentisida yang diuji terdiri dari 4 kelompok perlakuan yang terdiri dari perlakuan A (papain 16%), B (papain 24%), C (papain 32%), dan D (papain 40%).

Proporsi pakan terdiri dari jagung, gandum, kedelai, karamel, papain kemasan produk merk “X” (berisi papain, garam, gula), parafin, minyak jagung dan gula halus. Rodentisida diberikan kepada mencit selama tujuh hari, dicatat jumlah pakan dan kematian mencit setiap hari. Hasil penelitian menunjukkan jumlah kematian mencit semakin meningkat seiring dengan semakin meningkatnya konsentrasi papain kemasan produk merk ‘X’ yang ditambahkan ke dalam pakan. Ada perbedaan signifikan kecepatan kematian mencit di antara berbagai perlakuan (p-value<0,05), yaitu pada perlakuan A dan D. Proporsi pakan dengan konsentrasi papain kemasan produk merk “X” 40% dapat dijadikan alternatif untuk membuat rodentisida nabati dengan kematian paling tinggi.

Kata Kunci: rodentisida nabati, papain pepaya, mencit

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Faktor Lingkungan Biotik dalam Kejadian Luar Biasa Leptospirosis di Kabupaten Tangerang, Banten

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Leptospirosis adalah zoonosis yang disebabkan oleh bakteri Leptospira sp. Leptospirosis menjadi masalah kesehatan masyarakat di seluruh dunia, termasuk di Indonesia. Kasus leptospirosis di Kabupaten Tangerang tahun 2015 mengalami peningkatan kasus di mana kasus terbanyak salah satunya di wilayah Puskesmas Kronjo. Faktor lingkungan berpengaruh terhadap penyebaran penyakit leptospirosis salah satunya faktor biotik. Tujuan penelitian menganalisis hubungan faktor lingkungan biotik terhadap kejadian leptospirosis di Kabupaten Tangerang. Penelitian dilakukan secara cross sectional dengan pendekatan observasi lokasi, dan observasi secara kuisioner lingkungan biotik rumah penduduk. Jumlah sampel rumah untuk pemeriksaan lingkungan biotik sebanyak 35 rumah. Data yang dikumpulkan meliputi adanya keberadaan hewan peliharaan di rumah, dan tanaman di sekitar rumah. Data keberhasilan penangkapan tikus dilakukan dengan penangkapan tikus di lokasi. Data dianalisis secara deskriptif dan analisis bivariat. Hasil penelitian menunjukkan adanya vegetasi (OR = 1,103; 95% CI= 0,987-1,234; p = 0,579) dan hewan peliharaan (OR = 0,567; 95% CI= 0,47-6,895; p = 0,653) secara statistik tidak memiliki hubungan dengan kejadian leptospirosis. Tingginya trap success di lokasi penelitian dapat merupakan resiko potensial untuk kejadian leptospirosis.

Kata kunci: Hewan peliharaan, Tikus, Vegetasi, leptospirosis, biotik

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Program Nasional untuk Eliminasi Filariasis Limfatik: Studi Kasus di Kabupaten Pekalongan, Jawa Tengah

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Kata Kunci: Filariasis Limfatik, POPM, Pekalongan, Vektor

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Catatan Baru Kelelawar Pemakan Nektar (Macroglossus sobrinus) sebagai Reservoir Leptospirosis dari Indonesia

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Kata kunci: Leptospirosis, Leptospira, Kelelawar

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Penemuan Kasus Leptospirosis dalam Pengembangan Surveilans Leptospirosis di Kota Semarang, Jawa Tengah, Indonesia

Vektora Volume 10 Nomor 2, Oktober 2018, Halaman 113 - 118


Kata Kunci: Leptospirosis, surveilans, penemuan kasus, daerah endemis, deteksi

Implementasi Peraturan Daerah Tentang Pengendalian Demam Berdarah Dengue di Kota Semarang


Kata kunci: implementasi, kebijakan, pengendalian, DBD


Kata kunci: implementasi, kebijakan, pengendalian, DBD

Implementasi Peraturan Daerah Tentang Pengendalian Demam Berdarah Dengue di Kota Semarang

Vektora Volume 10 Nomor 2, Oktober 2018, Halaman 119 - 126

Kata kunci: Brucellosis pada manusia, penyakit zoonosis yang terabaikan, peternak sapi perah, cuci tangan

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Faktor Risiko Perilaku Masyarakat pada Kejadian Luar Biasa Leptospirosis di Kabupaten Kebumen Tahun 2017

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yang memiliki hubungan dengan kejadian leptospirosis adalah variabel ke pekarangan tanpa alas kaki (OR=0,25; 95%), beraktifitas di sawah (OR=0,16; 95%), dan jika ada luka terbuka tidak ditutup (OR=0,12; 95%). Perlu adanya penyuluhan kepada masyarakat untuk memakai alas kaki ketika di sawah/pekarangan serta menutup luka terbuka dengan plester agar mencegah bakteri leptospira masuk ke dalam tubuh.

Kata Kunci : Faktor Risiko, Perilaku, Leptospirosis, Kebumen
LEPTOSPIROSIS CASE FINDING FOR DEVELOPMENT OF LEPTOSPIROSIS SURVEILLANCE IN SEMARANG CITY, CENTRAL JAVA, INDONESIA


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Abstract

Leptospirosis is endemic in some parts of Indonesia territory. This work aimed to find the leptospirosis cases in Semarang city, one of the endemic leptospirosis in Indonesia by both active and passive case findings. The leptospirosis was screened in the community base active case finding. In addition, the cases were passively found in primary health care center and hospitals using a WHO-SEARO criteria and laboratory confirmation test. There were 191 cases detected with WHO-SEARO criteria, and among those cases only 31 cases (3 from active finding and 28 from passive finding) confirmed by laboratory test, either by using Rapid Detection Test (RDT), Microscopic Agglutinations Test (MAT) or Polymerase chained reaction (PCR). Fever, headache and myalgia were the most common symptoms experienced by >90% patients. Based on an active case finding that no more than 21.4% (3/14) probable leptospirosis was detected in this study, meanwhile there was passively 15.8% (28/177) cases confirmed. It was concluded that leptospirosis case finding is still challenging in the endemic area, Semarang city. The application of WHO-SEARO criteria as diagnostic tool may be need to be further evaluated.

Keywords: Leptospirosis, Surveillance, Case finding, passive, active

Abstrak

INTRODUCTION

Leptospirosis is a zoonosis acute generalized infectious disease characterized by extensive vasculitis, caused by spiral bacteria, *Leptospira sp*. In addition, the disease is primarily a disease of wild and domestic animals, and may be transmitted to humans through either direct or indirect contact with infected animal urine (WHO, 2003; Keenan et al., 2009). The annual incidence of leptospirosis is estimated from 0.1–1 per 100,000 people in temperate climates to 10–100 per 100,000 people in the humid tropics. The incidence may be increased more than 100 per 100,000 people during outbreaks and in high-exposure risk groups. According to the World Health Organization (WHO), Leptospirosis is one of an emerging diseases of public health concern in South East Asian countries (WHO, 2009).

Leptospirosis is endemic in part of Indonesia territory (Gasem et al., 2009). The incidence of leptospirosis in Semarang city, one of the endemic area in Indonesia in 2000 was 1.2 per 100,000 populations (WHO, 2009). However, there was a trend of increasing incidence of leptospirosis since 2002. Data from hospitals in Semarang showed that the morbidity was 4.14% annually with 16.92 % of mortality (Setyorini & Dangiran, 2017).

Diagnosis of leptospirosis remains controversial, which lead to under-diagnosis worldwide. Leptospirosis has clinical symptoms similar as other disease and many people showed mild clinical symptoms so it is difficult to diagnose and need confirmed laboratory test. However, WHO-SEARO (World Health Organization South-East Asia Region) criteria have been reported effective for leptospirosis case finding (Kumar, 2013). The criteria was introduced to overcome the limitation of confirmatory laboratory test for leptospirosis such as: microscopic agglutinations test (MAT), rapid diagnosis tests (RDT) and direct examination of molecular biology (WHO, 2003; Singh & Vijayachari, 2012; Chaudhry et al., 2013). The result study of Andani (2014) in Kariyadi Hospital showed that WHO-SEARO criteria was facilitated leptospirosis diagnoses like as clinical picture, exposure risk, and laboratory test on acute fever cases.

WHO (1999) recommend both active and passive leptospirosis case finding as part of the multi-diseases approach to surveillance. The aim of the study was found leptospirosis cases which active and passive performed in endemic area. Because leptospirosis is a largely neglected disease, it needs highly awareness of leptospirosis risk.

MATERIAL AND METHODS

**Ethics Committee Approval**

The Medical and Health Research Ethics Committee (MHREC) Faculty of Medicine Gadjah Mada University Dr. Sardjito General Hospital states that the leptospirosis surveylance protocol meets the ethical principle outlined in the Declaration of Helsinki 2008 and therefore can be carried out. The number of Ethics Committee Approval is KE/FK/108/EC.

**Active case finding:**

Active case finding was performed in Semarang city. Active and passive leptospirosis case findings were performed on May 2014 to October 2015. Enumerators actively screened subjects in the community. Patient has fever in the last 2 days will be further screened by using WHO-SEARO criteria (Kumar, 2013). Subject matched with suspected leptospirosis will be asked to donate 10 ml blood for subsequent confirmatory laboratory tests for Leptospira infection. In this WHO-SEARO catagories, the case definition has three categories: suspect (which consists of only clinical features), probable (which consists of clinical features + Rapid diagnostic tests) dan confirmed (which consists of clinical features + positive MAT/ PCR/Culture) (Kumar, 2013).

**Passive case finding:**

Passive case finding was performed in hospitals and primary health centers in Semarang city. Enumerator will screen patients fulfilled suspected leptospirosis criteria, and additional blood sample will be obtained for
subsequent confirmatory laboratory tests for leptospira infection. All procedures were received ethical approval from Medical and Health Research Ethics Committee Faculty of Medicine Universitas Gadjah Mada / Dr. Sardjito General Hospital.

DNA Extraction
Leptospira DNA was extracted from whole blood of patients by using standard method as described elsewhere. Leptospira DNA were extracted, purified and eluted using the invitrogen DNA extraction kit according to the manufacturer’s instructions.

Polymerase Chained Reaction (PCR)
DNA was subjected for PCR amplification by using Go Taq Green Master Mix PCR amplification was performed according to the manufacturer suggested protocol. Primers correspond to gen 16sRNA were employed. The primers sequences are as follow: Forward 5’ GCAAGCATTACCGCTTGTGG 3’ and reverse 5’ TGTTGGGGAAATCATACGAAC 3’. The PCR produces 262 bp amplicon (Branger et al., 2005).

Rapid Diagnosis Test (RDT)
Leptotek lateral flow (BioMerieux bv, Boxtel, NL) was employed to confirm the leptospirosis cases. Leptotek lateral flow 10 µl whole blood was spotted in the sample port of the device, running buffer was added and the test was read after 15 minutes. Leptotek lateral flow were valid when the control band stained. Valid tests were scored positive when a test band was observed, negative when no band was observed and indeterminate when it was unclear whether a band was observed or not. Invalid tests were repeated.

Microscopic Agglutinations Test (MAT)
MAT was performed to confirm the presence of antibody specific (IgM and IgG) against Leptospira in the whole blood of suspected leptospirosis patients. MAT was performed according to the suggested protocol of WHO (2007). The Leptospira panel which was used for MAT procedure was generously donated by Regional Medical Research Centre, Indian Council of Medical Research, India. Data was analyzed by univariate. Univariate Analysis saw the frequency distribution by active and passive leptospirosis cases based on WHO-SEARO criteria.

RESULTS
Fever, headache, and myalgia symptoms are the main symptoms that found in leptospirosis cases. Table 1 describes the clinical symptoms which were recorded in the index cases. Meningitis was the less frequent symptom found in the probable leptospirosis cases. The suspected leptospirosis cases were significantly higher in males than females, and more than leptospirosis cases are productive people (20-50 years old) and older people (>50 years old). (Table 2).

Table 1. Active and Passive Finding Case of Clinical symptoms of Probable Leptospirosis patients, 2014-2015

<table>
<thead>
<tr>
<th>No</th>
<th>Clinical Symptoms</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Fever</td>
<td>191</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>Headache</td>
<td>183</td>
<td>95.8</td>
</tr>
<tr>
<td>3.</td>
<td>Myalgia</td>
<td>176</td>
<td>92.4</td>
</tr>
<tr>
<td>4.</td>
<td>Calf pain</td>
<td>115</td>
<td>60.5</td>
</tr>
<tr>
<td>5.</td>
<td>Jaundice</td>
<td>55</td>
<td>28.6</td>
</tr>
<tr>
<td>6.</td>
<td>Conjunctival suffusion</td>
<td>48</td>
<td>25.2</td>
</tr>
<tr>
<td>7.</td>
<td>Meningitis</td>
<td>31</td>
<td>16.0</td>
</tr>
</tbody>
</table>

Table 2. Characteristics of Patients Leptospirosis Based on the WHO-SEARO Criteria, 2014-2015

<table>
<thead>
<tr>
<th>No</th>
<th>Characteristic</th>
<th>Active case finding</th>
<th>Passive case finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>11</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>3</td>
<td>66</td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0-10</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>11-20</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>21-30</td>
<td>5</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>31-40</td>
<td>3</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>41-50</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>&gt;50</td>
<td>1</td>
<td>14</td>
</tr>
</tbody>
</table>

Only 31 out of 191 suspected leptospirosis cases were confirmed by using laboratory examination. This data showed that only 15.8% (28/177) of the probable leptospirosis cases screened by passive case finding were confirmed as definite leptospirosis cases, and 21.4% (3/14) in active case finding series (Table 3).
Table 3. Laboratory confirmation of leptospirosis cases 2014-2015

<table>
<thead>
<tr>
<th>Case Finding Methods</th>
<th>WHO Criteria Cases</th>
<th>Laboratory Confirmed Cases</th>
<th>Laboratory Confirmatory Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>RDT*</td>
</tr>
<tr>
<td>Active</td>
<td>14</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Passive</td>
<td>177</td>
<td>28</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>191</td>
<td>31</td>
<td>11</td>
</tr>
</tbody>
</table>

*: RDT: Rapid diagnosis test; MAT: Microscopic agglutination test; PCR: Polymerase Chained Reaction.

DISCUSSION

The finding of leptospirosis was peaked on July 2014 is interesting, since leptospirosis traditionally reported high prevalence in rainy season. However this finding may highlight the important of risk factors, such as knowledge, perception, and behavior of individuals in the community and other environmental determinant than excessive water and flood that may occur in rainy season (Kamath et al., 2014; Sumanta et al., 2015). The result of study in Brazilia showed that there is the correlation between rainy season with leptospirosis cases and increased 0.55% of leptospirosis cases (Kupek et al., 2000).

The result indicated that suspected leptospirosis cases was mostly found in the productive age population (20-50 years). The result was in agreement with the previous report in Brazil showing that leptospirosis was mostly occurred in productive age between 15-50 years old (Barcellos & Sabroza, 2001). This trend was also reported in Hawaii and India that most of the cases was found in productive people (Katz et al., 2011; Kamath et al., 2014). It is a great challenges for the government to protect the productive ages to become ill because of the leptospiro infection, otherwise will contribute to the social and economical burdens for the community.

The laboratory confirmed cases were found only 15.8% in passive case finding and 21.4% in active case finding. We used laboratory examination like RDT (Rapid Detection Test), MAT (Microscopic Agglutinations Test) and PCR (Polymerase Chained Reaction) for confirmation of leptospirosis cases. Some of researches showed that the sensitivity of RDT was 65-93%, sensitivity of PCR was 52-63%, specificities of RDT was 83-98%, and specificities of PCR was 79-100% than gold standar (MAT) (Bhatia et al., 2015; Mullan & Panwala, 2016).

This data showed that finding the leptospirosis cases in the field by using modified WHO-SEARO criteria is tending to be over diagnosed compare to the gold standard. Our data which obtained from both primary health center (in the community) and tertiary referral hospital showed the same limitation of WHO-SEARO criteria compare to the gold standard. Similar result was also reported in India (Bhatia et al., 2015). The three symptoms which were recorded, i.e: fever, headache, and myalgia in this series of patients are common symptoms of many infectious diseases. Furthermore, there is difficult to collecting leptospirosis data because scattered distribution of leptospirosis cases and limited location of laboratories for gold standard examination.

Active cases were found in Semarang and was identified 14 of 191 cases (7%) based on the WHO-SEARO criteria, and 3 of 14 cases (21.4%) for laboratory confirmation of leptospirosis infection. Considering very low additional cases could be identified using active case finding strategy, it seems that active cases finding is not recommended in the area where leptospirosis is endemic, such as Semarang city. However, active leptospirosis case finding may be useful to be applied when it is performed in a multi-diseases approach to make it more efficient and cost effective.

CONCLUSIONS AND RECOMMENDATION

Conclusions

It was conclude that leptospirosis case finding is still challenging in the endemic area, such as Semarang city. The active and passive finding of leptospirosis cases in the field using WHO-SEARO criteria tends to be over diagnosed compared to the gold standard.

Recommendation

Active and passive leptospirosis case finding using WHO-SEARO criteria can be applied at primary health center. It is necessary to examine leptospirosis surveillance indicators or variables for early warning systems.

AUTHOR CONTRIBUTIONS

R, main contributor, roles: conceptualization, data curation, methodology, writing - original draft, writing - review & editing. FDH, supporting contributr, roles: data analysis. AM, roles: laboratory examination, writing –editing. TW, SB, S, roles: editing draft article

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REFERENCES


