DENGUE AND SALMONELLA INFECTIONS IN INDONESIAN CHILDREN

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Background

Dengue and salmonella are common infectious diseases in indonesia. Since the clinical manifestations are similar, it is often difficult for clinicians to make a confirmed diagnosis. Therefore, we explore data of acute febrile illness requiring hospitalization (AFIRE) in children to provide pediatricians the epidemiology, clinical characteristics and laboratory findings of these two diseases.

Methods

Data were collected from children participating in AFIRE study, conducted at 6 government provincial hospitals in Indonesia from mid-2013-2014. Diagnoses were made based on the hospitals' standard of care, except of blood culture which was compulsory in this study.

Results

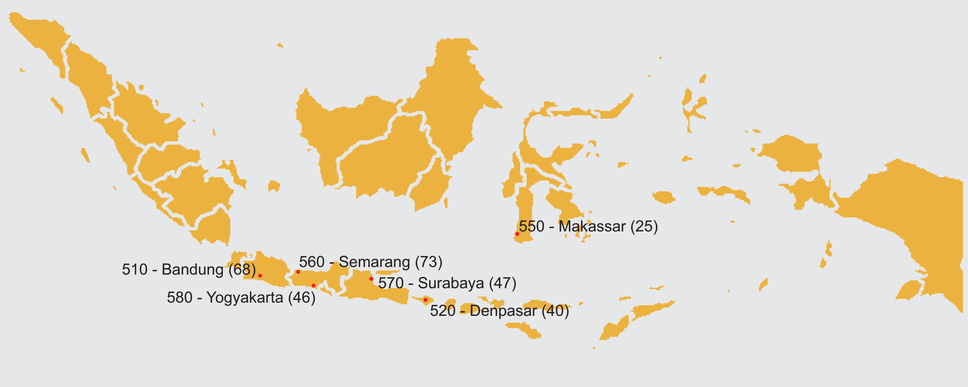

Figure 1: Study Sites and Enrolled Subjects

Figure 2: Proportion of dengue, typhoid, and dual infection cases at six AFIRE study sites

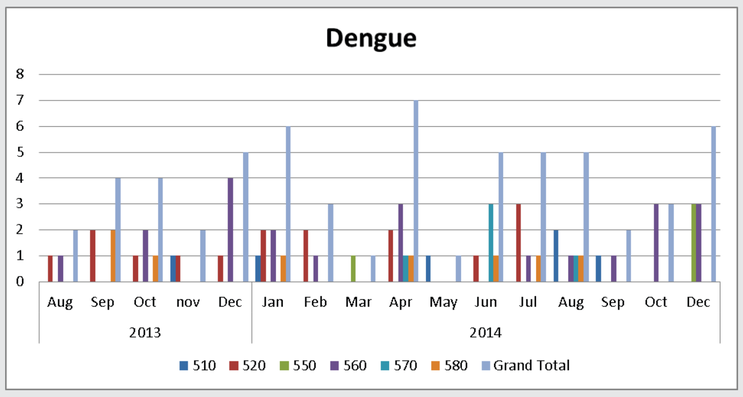

Figure 3: Monthly distribution of dengue cases

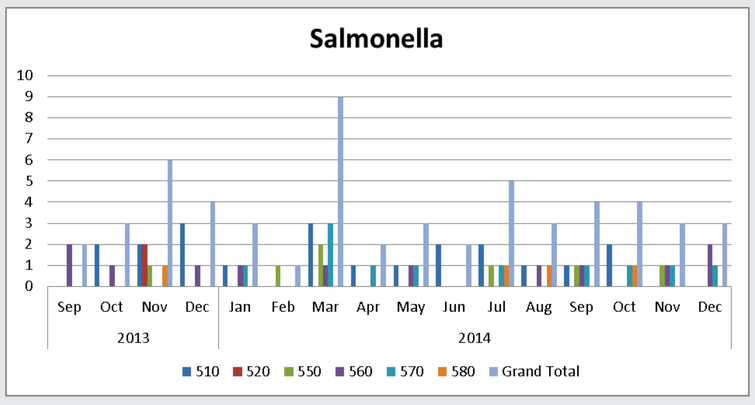

Figure 4: Monthly distribution of typhoid cases

Table 1: Characteristics of salmonella and dengue pediatric patients at six AFIRE study sites

Variabel	Dengue (n=55)	Salmonella (n=51)	p value
Gender			
Male	34 (61.8)	26 (51.0)	0.261
Age			
Median (range)	9.9 (1.3-17.8)	8.3 (2.3-17.6)	0.652
Signs and symptoms			
Headache	23 (41.8)	20 (39.2)	0.785
Dizziness	13 (23.6)	9 (17.6)	0.447
Chills	5 (9.1)	11 (21.6)	0.073
Lethargy	14 (25.5)	20 (39.2)	0.129
Runny nose	6 (10.9)	8 (15.7)	0.498
Cough	12 (21.8)	25 (49.0)	0.003
Anorexia	17 (30.9)	31 (60.8)	0.002
Nausea	31 (56.4)	32 (62.7)	0.504
Vomiting	36 (65.5)	25 (49)	0.496
Epigastric pain	9 (16.4)	10 (19.6)	0.663
Abdominal pain	16 (29.1)	21 (41.2)	0.192
Diarrhea	10 (18.2)	16 (31.4)	0.114
Constipation	2 (3.6)	11 (21.6)	0.005
Arthralgia	12 (21.8)	12 (23.5)	0.833
Myalgia	15 (27.3)	8 (15.7)	0.148
Spontaneous hemorrhage	19 (34.5)	5 (9.8)	0.002
Hematology results			
Leukopenia	31 (56.4)	12 (23.5)	0.383
Leukocytosis	9 (16.4)	6 (11.8)	
Normal thrombocyte	14 (25.5)	25 (49.0)	0.012
Thrombocytopenia	41 (74.5)	26 (51.0)	
Leukocytes range	1.500-13.200	2.400-16.800	
Thrombocytes range	15.000-347.000	30.000-455.000	

Table 2: Typhoid cases by diagnostic methods

Salmonella test	Count
Blood culture (S. typhi) and Salmonella IgM	9
Blood culture (S. typhi)	10
Blood culture (S. paratyphi A) and Salmonella IgM	4
Salmonella IgM	28
Total	51

Table 3: Dengue cases by diagnostic methods

Dengue test	Count
NS1 and dengue IgG	2
Dengue IgG and IgM	24
Dengue IgM	21
NS1	8
Total	55

Table 4: Six subjects with dual infections

Age	Sex	Sign and symptoms	CBC		Dengue test	Salmonella test
			WBC	PLT		
10.7	M	Anorexia, fever, lethargy, epistaxis, myalgia	5.9	82	Dengue IgM	BC Salmonella parathypi A, IgM Salmonella +7
14.8	M	Fever, headache, diarrhea	1.7	173	Dengue IgM	IgM Salmonella +6
6.5	F	Anorexia, chill, fever, lethargy, headache, constipation, nausea, arthalgia, myalgia	5.4	176	Dengue IgM	IgM Salmonella +4
7.2	F	Anorexia, chill, fever lethargy, headache, abdominal pain, diarrhea, nausea, vomiting	2.8	16.8	Dengue IgG, IgM	BC Salmonella typhi, IgM Salmonella +6
8.6	F	Anorexia, fever, headache, nausea, vomiting, epigastric pain, skin rash	2.3	114	Dengue IgG, IgM	IgM Salmonella +5
7.9	F	Anorexia, fever, lethargy, echymosis	3.5	161	Dengue IgM	Ig M Salmonella +6

From 299 enrolled subjects, dengue and typhoid fever diagnosis were made in 114 and 70 subjects, based on the standard of care diagnostic tool and blood culture 55(48.2%) and 51(72.9%) were confirmed, leaving 78(42.4%) undiagnosed.

Conclusion

Dengue and salmonella infections are the most important etiologies of acute febrile illness in children. The distribution varied in different regions in Indonesia. Several clinical manifestations and laboratory parameters may be used to differentiate the two diseases. As almost half cases remained unconfirmed, accurate rapid diagnostic tools are still needed.

Acknowledgement

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