DIPHtheria OUTBREAK IN EAST JAVA, INDONESIA 2011-2015: IS THERE ANY DIFFERENCE RISK FACTORS BETWEEN CARRIERS AND CASES?

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BACKGROUND

The re-emerged of diphtheria cases in East Java, Indonesia developed a thought to find out the risk factors for this outbreaks. Whether a carrier has a role or not for this outbreak has never been evaluated. We found only few comparison studies between pediatric diphtheria patients and carriers. The most previous studies discussed about the risk factors differences between diphtheria patients and healthy people. We analyzed the differences of risk factors between carriers and cases in children who confirmed positive culture of toxigenic *Corynebacterium diphtheria* strain from throat swab but have different outcome.

The aim of this study is to compare and analyze the difference of risk factors of pediatric diphtheria patients and carriers in East Java, Indonesia since 2011 to 2015.

METHODS

An observational cross sectional study was conducted. We retrieved data from Health office and East Java Regional Centre of Laboratory during outbreak 2011-2015 in Indonesia. Diphtheria carrier defined as person with positive throat swab culture of toxigenic *Corynebacterium diphtheria* without any clinical signs and symptoms.

These carriers were collected from close contact and family member of diphtheria patients.

Fig.1. Study flow chart for samples 1-18 years old

The age, sex, immunization history and nutritional status between patients and carriers aged 1-18 years old from 21 districts of East Java province were compared and analyzed by interviewed and measured.

RESULTS

In total, 147 diphtheria cases and 34 carriers were included. One hundred and one samples (56 %) were ≤ 9 years of age, and 80 (44 %) were ≥ 9 years of age.

Table1. The characteristics of diphtheria patients and carriers

The characteristics	Patients (n (%))	Carrier (n (%))
Age		
0 – 2 years old	4 (2,7)	2 (5,9)
≥ 3 – 9 years old	81 (55,1)	14 (41,2)
≥10 – 14 years old	43 (29,3)	12 (35,3)
≥15 – 18 years old	19 (12,9)	6 (17,6)
Sex		
Male	76 (51,7)	14 (41,2)
Female	71 (48,3)	20 (58,8)
Nutritional Status		
Moderate	27 (18,4)	6 (17,6)
Good	67 (45,6)	15 (44,1)
Overweight	23 (15,6)	3 (8,8)
Obese	30 (20,4)	10 (29,4)
Immunization Status		
Never	43 (29,3)	7 (20,6)
Uncomplete	50 (34)	11 (32,4)
Complete	54 (36,7)	16 (47,1)

The bivariate analyses showed there was no significant differences of risk factors between group. The most age in both group is 3 ≤ - 9 year old. It explain the wining immunity if there is no booster vaccination. Male is dominant (51.8 %) in patients group but in carriers are female (58.8 %). Both group have good nutritional status (p=0.63) and received complete basic immunization (p=0.45).

Table 2. The bivariate analysis of characteristics

The characteristics	P	OR
Age	0,356	1,529 (0,718 – 3,256)
0 – 2 years old		
≥ 3 – 9 years old		
≥10 – 14 years old		
≥15 – 18 years old		
Sex	0,269	0,703 (0,150 – 3,299)
Male		
Female		
Nutritional Status	0,627	
Moderate		
Good		
Overweight		
Obese		
Immunization Status	0,447	1,531 (0,721 – 3,248)
Never		
Uncomplete		
Complete		

It different from other study that explained malnourish children had lower response to vaccination. This study also explained that basic immunization doesn't enough to protect, so that booster immunization is very important.

CONCLUSION

Age, sex, nutritional status and immunization history between cases and carriers were not different during diphtheria outbreaks in East Java, Indonesia. These finding need further study to evaluate antibody level to explain the difference between patient and carrier.