THE EFFECTIVENESS OF LD75 INTRA PERITONEAL 0.25 MG/ KGBW LIPOPOLYSACCHARIDE IN INDUCING SEPSIS AND CAUSING DEATH IN MICE

IGL Sukamto1, Bambang Purwanto2, Ambar Mudigdo3, Suroto4

1) Doctoral Program in Medicine, Universitas Sebelas Maret
2) Department of Internal Medicine, Dr. Moewardi, Surakarta/ Faculty of Medicine, Universitas Sebelas Maret
3) Department of Anatomic Pathology, Dr. Moewardi, Surakarta/ Faculty of Medicine, Universitas Sebelas Maret
4) Department of Neurology, Dr. Moewardi, Surakarta/ Faculty of Medicine, Universitas Sebelas Maret

ABSTRACT

Background: Sepsis is a complex and serious problem. About 30 to 80% of sepsis is caused by Lipopolysaccharide (LPS). Previous studies set a large dose of intra peritoneal 5mg/ kgBW as a threshold for LPS to cause sepsis. No previous studies have informed about the minimal dose of LPS to cause sepsis. This study aimed to determine if ≥ 0.25 mg/ kgBW dose of LPS was effective to cause sepsis and death in mice.

Subjects and Method: This was a Randomized Controlled Trial conducted from January 18 to 24, 2016 at the Histology Laboratory of Universitas Sebelas Maret Surakarta. A sample of 20 mice was randomized into 5 groups, each consisting of 4 mice. Each mouse was injected intraperitoneal with one of 5 different doses of LPS: (1) Group 1 with 0.05 mg/ kgBW LPS; (2) Group 2 with 0.10 mg/ kgBW LPS; (3) Group 3 with 0.15 mg/ kgBW LPS; (4) Group 4 with 0.20 mg/ kgBW LPS; (5) Group 5 with 0.25 mg/ kgBW LPS. The LPS used in this study consisted of SIGMA L2880-10MG Lot # 025M4040V Lipopolysaccharides from Escherichia coli 055: B5 Purified by phenol extraction. The dependent variable was death. The independent variable was LPS. The percent of mortality after 3 days of LPS administration was compared between the group of mice receiving <0.25 mg/ kgBW LPS and the group of mice receiving ≥0.25 mg/ kgBW LPS using chi square test.

Results: The percent of mortality after 3 days of LPS administration in the group of mice receiving ≥ 0.25 mg/ kgBW LPS (75%) was higher than that in the group of mice receiving < 0.25 mg/ kgBW LPS (18.8%) (OR= 13.0; p= 0.028). It means that mice receiving ≥ 0.25 mg/ kgBW LPS had 13 times as many risk of death than mice receiving < 0.25 mg/ kgBW LPS, and it was statistically significant.

Conclusion: LPS with ≥ 0.25 mg/ kgBW dose is more effective to cause death of mice than LPS with < 0.25 mg/ kgBW dose.

Keywords: LPS, sepsis, mice, lethal dose

Correspondence: IGL Sukamto. Doctoral Program in Medicine, Universitas Sebelas Maret, Jl. Ir. Sutami 36 A, Surakarta 57126, Central Java, Indonesia. Email: igl.sukamto.span.dr@gmail.com. Mobile: 08122974441.