Relation between C-Reactive Protein Level and Intrauterine Infection in Pregnant Women with Premature Rupture of Membrane (PROM)

Abstrak
Tujuan: Untuk menguji hubungan kadar C-Reactive protein dengan infeksi dalam kandung (KDP) terjadi 12 jam awal terhadap mitos infeksi intrauterin.

INTRODUCTION
Premature Rupture of Membrane (PROM) is rupture of amniotic membrane before onset of labour. PROM is one of the most common obstetric problems faced by obstetrician, which requires accurate assessment, since its time it will increase risk of infection on mother and baby. Cox et al stated that perinatal mortality was 20% among mothers suffering from PROM.1,2
Causes of PROM are multifactorial, in which infection being the most frequent. In defining diagnosis of PROM, amnionecsis and physical examination alone are not enough to determine whether PROM definitely happened. Moreover there is no single test can accurately diagnose PROM, so we need integration of amnionecsis, physical examination, and additional examination to complete the diagnosis.2,4

C-reactive protein (CRP) is an abnormal serum produced by hepatic cell during acute inflammation, which production is regulated by interleukin 1β (IL-1β), interleukin 6 (IL-6) and tumor necrosis factor α (TNF-α). CRP level measurement has been well developed during the last three decades. Because CRP can fastily be removed when infection resolved, detection of CRP level is significant to determine the inflammatory or infection process on mother with PROM.5,6
C-reactive protein concentration in serum of PROM mother has been known to increase, but to what extent is not surely established. Data about CRP level and its relation with neonatal outcome are also still contradiction, so we emerge question about how the relation between CRP level in mother with PROM, the maternal complications, and neonatal outcome.7-9
**METHODS**

This study was designed as case series to see the relation between CRP serum level and the risk of intrauterine infection on mother with PROM ≤ 12 hours, conducted in delivery room in Dr. Mohammad Hoesin Hospital Palembang from July 1, 2009 - January 1, 2010. Sample were chosen with consecutive sampling method. 139 pregnant women with PROM entering delivery room Dr. Mohammad Hoesin Hospital Palembang, with inclusion criteria atern, life baby, age 20-35 years. Pregnancy with obstetrical complication like severe preeclampsia and medical complication like diabetes mellitus, being on certain antibiotics medication, or neonates with congential anomaly were excluded from this study. Some variables such as body temperature, leukocyte count, mothers CRP level and neonates APGAR score were then measured. Mothers temperature was measured by accessing rectal mucous with digital thermometer microflect MT 200. Blood sample for leukocyte and CRP sample were drawn from mothers veins median cubital account for 3 cc leukocyte count for ≥ 15000/mm³ was considered abnormal. CRP serum was quantitively measured by latex agglutination method with Avitek® (Omegra Diagnostic). C-reactive protein was abnormal if > 19 mg/dl. Neonatal outcome was then measured by APGAR score. Patient data were recorded in an available form, then arranged as a data base. Tabulation was then made according to simple linear regression and analyzed by SPSS version 15.0th.

**RESULTS**

From July 1, 2009 - January 1, 2010 55 subjects for the study that matched inclusion criteria were obtained. Most subjects were between 26-30 years old, which were distributed mostly in urban area, and subject parity 36.6% were nullipara. Subjects education level were quite good (mostly from high school) and 78.2% were housewives. It was found that average level of CRP ≤ 12 hours PROM mother were 27.12 ± 15.58 mg/dl with all of the PROM mother both ≤ 12 and ≤ 6 hours were CRP (+). This showed that infection or inflammation happened to all of mothers with PROM, this statement goes along with study by Memon et al, in which PROM as one of complex pathological process was caused by inflammation. 83.6% mother with ≤ 12 hours PROM whose CRP level > 10 mg/dl was also found in this study. Results from rectal temperature measurement and leukocyte count can be seen in Table 1 and 2.

From Table 1 shows 85.5% subjects temperature < 38°C with mean 37.41 ± 0.3°C. Stewart et al. take definition of chorioamnionitis is if rectal temperature > 37.5°C on two times measurement with 1 hour interval or if temperature > 38°C on one time measurement. Our standard operating procedure in Dr. Moh. Hoesin Hospital, Palembang took rectal temperature > 3°C.

Table 2 shows 69.1% of subject had leukocyte count < 15000/mm³ with average 10985 ± 2835 /mm³. Memon's definition of chorioamnionitis is if leukocyte count > 15000 cells/mm³ while Hurtman et al. stated that leukocytes more than 15000 - 30000 are still considered normal, while based on standard operating procedure in Dr. Moh. Hoesin Hospital Palembang, it is called infection if leukocyte count > 15000/mm³.

Relation between increase of CRP level and increase in rectal temperature and leukocyte count was searched (Figure 1) and the result was R=0.218 and p=0.110, in which there was slightly association between CRP in mothers serum and increase of rectal temperature and leukocyte count.

Although can not be counted methodologically, there was less APGAR score in group CRP > 10 mg/dl.
DISCUSSION

There was a slight association between CRP increase and rectal temperature and leukocyte count found in this study. Also there was a relation between CRP level in mother serum and leukocyte count found in this study. Also there was a relation between CRP level in mother serum and leukocyte count.

CONCLUSION

In this study, relation between CRP and leukocyte count and rectal temperature in mother with PROM < 12 hours was slightly associated C-reactive protein cannot be the only factor to predict intracranial infection. We need further study with bigger sample size to get better result for relationship between CRP and the risk for intracranial infection for mother with PROM.

REFERENCES