An Overview of Potential Drug Interactions in Patients with Cesarean Section at RSUD Dr. Soekardjo Tasikmalaya

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Abstract. Drug interaction is when a drug competes with one another, or which occurs when one drug is present along with another drug so that the effectiveness or toxicity of the drugs are affected or changed. The study was conducted observationally, using descriptive method. Data was obtained from a retrospective research of medical records in the period from July to December 2017 at RSUD dr. Soekardjo Tasikmalaya. Data were analyzed using drug interaction checkers such as Stockley's Drug Interaction Edition, Drugs Interaction Facts by Tatro in 2009, and Pocket Guide to Evaluations of Drug Interactions. The number of research subjects who met the inclusion criteria were 115 people. Data were analyzed using SPSS chi-square method. 100% potential drug interactions occur based on severity analysis.

1. Introduction
Drug interactions are when the drug competes with one another, or which occurs when one drug is present along with another drug so that the effectiveness or toxicity of one drug or more is affected or changed [1]. One important cause of unwanted drug reactions that can result in non-compliance or drug withdrawal events is drug interactions [2,3]. Drug interactions are separated into two, namely drug interactions in the pharmacokinetic and pharmacodynamic phase [3]. Drugs react via pharmacokinetics phase if the interaction between two drugs affects the absorption, distribution, metabolism, or excretion. Detection of pharmacodynamic interactions requires knowledge of drug pharmacological action, such as interact by producing antagonistic effects on each other. In addition, drugs can interact by causing negative synergistic effects or by producing indirect pharmacodynamic effects [4]. The incidence of major surgery is increasing all over the world [5,6]. In Indonesia, the incidence of cesarean section also continues to increase in both government hospitals and private hospitals [7]. Increased incidence of caesarean section increases the incidence of complications resulting in increased drug use. Increasing use of drugs will increase the occurrence of drug interactions.

2. Methods
The study was carried out in a non-experimental (observational) method, using descriptive method. Data was obtained from a retrospective search of medical records in the period from July to December 2017 at RSUD dr. Soekardjo Tasikmalaya.
2017 at the RSUD Dr. Soekardjo Tasikmalaya. Inclusion criteria was patients with drug use more than 1 type of drug. Exclusion criteria was incomplete medical record data. The tools used in this study were data collection sheets, drug interaction checkers such as Stockley's Drug Interaction Edition, Drugs Interaction Facts by Tatro in 2009, and Pocket Guide to Evaluation of Drug Interactions. The number of research subjects who met the inclusion criteria were 115 people. Data were analyzed using SPSS chi-square.

3. Results

3.1. Patient Characteristics

Patient characteristics were analyzed based on age, parity status, diagnosis, age and pregnancy.

Table 1. Sectio caesarea (SC) Patient Distribution Based on age in Obstetrics-Gynecology Room RSUD dr. Soekardjo July-December 2017

| Age (Years) | n=115 | % |
|-------------|-------|---|
| < 20        | 2     | 1.73 |
| 20-35       | 93    | 80.87 |
| >35         | 20    | 17.40 |
| Parity Status |       |     |
| G1P0A0      | 41    | 35.65 |
| G1P1A0      | 1     | 0.87 |
| G2P0A1      | 3     | 2.61 |
| G2P1A0      | 34    | 29.56 |
| G2P1A1      | 1     | 0.87 |
| G2P2A0      | 1     | 0.87 |
| G2P1A1      | 3     | 2.61 |
| G3P2A0      | 17    | 14.78 |
| G3P1A2      | 1     | 0.87 |
| G3P2A1      | 1     | 0.87 |
| G3P2A0      | 4     | 3.48 |
| G4P0A4      | 1     | 0.87 |
| G5P3A1      | 1     | 0.87 |
| G6P4A1      | 2     | 1.73 |
| G5P2A1      | 1     | 0.87 |
| G7P5A1      | 1     | 0.87 |

Diagnosis

| SC+IUD      | 106   | 92.17 |
| SC+MOW      | 9     | 7.83  |

Gestational Age

| Preterm (<38 Weeks) | 33    | 28.7  |
| Aterm (38-42 Weeks) | 76    | 66.1  |
| Post term (>42 Weeks) | 6   | 5.2  |

Based on table 1, the highest number of people who did the caesarea section 87% were productive age, 25-35 years old. Based on parity status, the highest number of patients who performed the caesarea section was G1P0A0 which was the first pregnancy with the number of partisans 0 and the number of abortions 0. The highest diagnosis were patients with IUD (106 patients). The highest gestational age was around 38-42 weeks.

3.2 Drug Profile

Characteristics of Prophylaxis Antibiotic of SC Surgical Patients
Table 2. Prophylaxis Antibiotic in Sectio caesarea (SC) Patients of Obstetrics-Gynecology Room at RSUD dr. Soekardjo from July-December 2017.

| No | Generic Name | Trade Name | Number of Drugs | Percentage (%) |
|----|--------------|------------|-----------------|----------------|
| 1  | Ceftriaxon   | Ceftriaxone| 56              | 48.69          |
| 2  | Cefotaxim    | Cefotaxime | 59              | 51.31          |
|    | **Total**    |            | **115**         | **100**        |

Table 3. Non-Antibiotics Drugs in Sectio caesarea (SC) Patients of Obstetrics-Gynecology Room at RSUD dr. Soekardjo from July-December 2017.

| No | Class Therapy                     | Generic Name       | Trade Name       | Number of Drugs | Percentage (%) |
|----|------------------------------------|--------------------|------------------|-----------------|----------------|
| 1  | Analgetic and antipyretic          | Paracetamol        | Paracetamol      | 4               | 3.22           |
| 2  | Corticosteroid                     | Dexamethason       | Dexamethasone    | 21              | 16.94          |
|    | Methyl prednisolon                 | Gamesolone         | Gamesolone       | 1               | 0.81           |
| 3  | Antihypertensive                   | Metildopa          | Metildopa        | 48              | 38.71          |
|    |                                    | Dopamet            | Dopamet          | 1               | 0.81           |
|    |                                    | Nifedipin          | Nifedipine       | 6               | 4.84           |
|    |                                    | Amlodipin          | Amlodipine       | 34              | 27.42          |
| 4  | Antihistamin                       | Cetirizin          | Cetirizin        | 1               | 0.81           |
| 5  | Vasodilator (Uterus Contraction)   | Histolan           | Histolan         | 3               | 2.42           |
| 6  | Vitamin                            | Vitamin B          | Alinamin F       | 1               | 0.81           |
| 7  | Diuretic                           | Furosemide         | Furosemide       | 3               | 2.42           |
| 8  | Expectoran                         | Black cough medicine|                | 1               | 0.81           |
|    | **Total**                          |                    | **124**          | **100**         |

Table 4. Severity Analysis

| Severity | Total | Percentage |
|----------|-------|------------|
| Mayor    | 0     |            |
| Moderate | 20    | 100%       |
| Minor    | 0     |            |
| **Total**| 20    | **100%**   |

Table 5. Drug Interactions Severity Analysis

| Drug Interactions | Phase         | Severity | Effect | Monitorized |
|-------------------|---------------|----------|--------|-------------|
| Amlodipine        | Pharmacokinetics | Moderate | Dexamethasone can reduce the effect of amlodipine so that the antihypertensive effect is reduced | Blood pressure |
| Cefotaxime        | Pharmacokinetics | Moderate | Furosemide can | BUN, |

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### Table 1: Drug Interactions

| Drug Combination       | Severity | Notes                                                                 |
|------------------------|----------|-----------------------------------------------------------------------|
| Furosemide             |          | Increase the risk of cephalosporin nephrotoxic drugs.                 |
| Dexamethasone          |          | Dexamethasone can reduce the effect of furosemide as an antihypertensive drug |
| Methyldopa             |          | Dexamethasone can increase the effect of hypokalemia                  |
| Metilprednisolone      |          | Metilprednisolone can enhance the effect of hypokalemia from furosemide|

### 4. Discussion

Cesarean section (SS) is a surgical process to give birth through incisions in the abdominal wall and uterine wall [6]. The SS delivery rate is predicted to continue to increase. This is because of the advancement of science, especially in the fields of obstetrics and gynecology, electronic fetal monitoring has been widespread, and because of the increasing of patients economic status and high education levels [5]. Based on patients characteristic, the most patients experienced caesarea section as many as 93 people from 20-35 years old. This was in line with the research carried out by Lely (2015). The age group of 20-35 years is a healthy reproductive age group and most pregnancies will occur in this age and rarely at risk of experiencing postterm labor [7].

Major severity of drug interactions has the potential to have a fatal effect on patients, which can cause permanent damage to patients organs even lead to death. Moderate severity has the potential to have a moderate effect, which can cause damage to organs so that it requires additional treatment. Minor severity has the potential to have a mild effect, so that it can be treated well without the need for additional treatment [1,2].

Moderate severity was the results from this research severity analysis (100%). Moderate severity has the potential to have a moderate effect, and causes damage to the organs and thus requires additional treatment [8]. Amlodipine is a dihydropyridine CCB class of drugs that can inhibit influx calcium in the heart muscle, smooth muscle, reduce vascular pressure and cause vasodilation. Amlodipine has a long half-life, low prices and has a positive effect on the treatment of hypertension in pregnancy. The use of amlodipine can interact with dexamethasone. Dexamethasone was used as pain control in the post caesarean section [9], besides that dexamethasone was used as an antiemetic to overcome nausea and vomiting due to Post-dural puncture headache (PDPH) [10]. Interactions that occur between amlodipine and dexamethasone can reduced amlodipine blood level so that the antihypertensive effect of amlodipine will decrease. Cefotaxime is a 3rd generation cephalosporine which works to inhibit the synthesis of bacterial cell wall which is used as prophylaxis [11]. Furosemide is used as an
antihypertensive in preeclampsia [12]. Simultaneous use of cefotaxime and furosemide can increase the risk of cefotaxime nephrotoxic [13]. Not all drug interactions are clinically meaningful. Some drug interactions might theoretically occur. Strategies that can be carried out by pharmacists to prevent and deal with drug interaction is by giving the distance between the time of drug administration, strict laboratory monitoring, evidence based on drug interactions so that dosage changes or drug discontinuation can be done if necessary. Providing information about patient risk factors that increase the risk of negative outcomes to prevent interaction.

5. References

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