INTISARI

Pemberian obat secara intravena banyak digunakan di ruang ICU. Namun risiko terjadinya inkompatibilitas dapat terjadi akibat kurangnya pengetahuan tenaga kesehatan. Inkompatibilitas pada sediaan intravena merupakan reaksi kimia fisika yang tidak diinginkan akibat pencampuran dua atau lebih sediaan obat. Penelitian ini bertujuan menganalisa pengetahuan tenaga medis tentang penyiapan sediaan IV dan menilai kelengkapan informasi brosur sediaan intravena, mengidentifikasi inkompatribilitas fisika sediaan intravena, mengetahui perbedaan inkompatibilitas kimia berbagai sediaan fenitoin dan mengetahui cara penanganan inkompatibilitas sediaan IV di ICU.

Metode penelitian terdiri dari empat tahap, tahap pertama menggunakan *cross sectional,* kuesioner digunakan untuk mengevaluasi pengetahuan tenaga medis yang menggunakan sediaan IV pada 80 responden tenaga kesehatan. Untuk melakukan evaluasi kelengkapan informasi brosur, sejumlah 148 sampel brosur sediaan intravena di evaluasi berdasarkan Peraturan Badan Pengawas Obat dan Makanan Indonesia No 24 tahun 2017. Tahap kedua diawali dengan pengambilan data secara prospektif menggunakan rekam medis pasien yang sesuai dengan kriteria penelitian sebanyak 100 sampel, kemudian obat yang diberikan secara IV dilakukan evaluasi inkompatibilitas menggunakan referensi. Campuran obat yang tidak ada direferensi standar Lexicomp dan *Handbook on injectable drug 19th edition ASHP'S Guide to IV Compatibility and Stability* di uji inkompatibilitas fisik meliputi ukuran partikel, kekeruhan dan viskositas. Tahap ke tiga, dilakukan uji inkompatibilitas fisika kimia sediaan intravena fenitoin dalam pelarut normal salin dari berbagai pabrik yaitu dengan pengujian stabilitas sediaan, bobot molekul dan gugus fungsi sebanyak tiga kali replikasi. Tahap empat penelitian melakukan survei dengan pengisian kuesioner oleh tenaga medis di rumah sakit terkait pengatasan inkompatibilitas sediaan intravena.

Hasil penelitian tahap satu responden yang memahami proses rekonstitusi sejumlah 79 (98,75%), telah menjalani pelatihan aseptik sejumlah 46 (57,5%) dan yang mengandalkan brosur sebagai informasi utama 49 (61,25%). Informasi brosur yang menyantumkan penyimpanan sejumlah 148 (99%), cara rekonstitusi 54 (36%), inkompatibilitas obat 28 (19%), stabilitas obat 12 (8%), dan daftar eksipien sejumlah 10 (7%). Pada tahap dua seratus campuran sediaan IV di ICU diketahui sebanyak 68% kompatibel (K), 19% inkompatibel (I) dan 13% *no information (NI)*. Hasil uji inkompatibilitas fisik dari 9 campuran sediaan IV yang tidak ada di referensi menunjukkan adanya peningkatan pH, perubahan ukuran partikel, perubahan kekeruhan, dan perubahan viskositas. Hasil uji tahap tiga menunjukkan ketidakstabilan yang berbeda-beda pada sediaan fenitoin sampel A, B, dan C pada konsentrasi 7 ppm. Uji Fisik pH tidak ada kenaikan lebih dari 1 unit dari waktu 0, 3, dan 6 jam ke tiga sampel dan terjadi peningkatan kekeruhan hal ini sesuai dengan pengujian organoleptis ukuran partikel dengan terbentuknya kristal jarum. Pengujian bobot molekul antara fenitoin murni dan endapan sediaan didapat hasil yang sama yaitu 252 m/z. Tahap empat melibatkan 14 responden tenaga kesehatan di ruang ICU diketahui sejumlah 13 (92.9 %) responden menjumpai kejadian inkompatibilitas pada 7 jenis obat, dan sejumlah 5 (29.4%) responden menjumpai problem inkompatibilitas pada sefoperazon. Tujuh (53,8%) responden menyatakan inkompatibilitas yang sering muncul berupa perubahan warna pada sediaan sefoperazon dan seftriakson, dan sebanyak 6 (46,2%) perawat mengatasi inkompatibilitas dengan mengganti sediaan baru. Pencantuman informasi yang komprehensif dalam brosur sangat penting untuk mencegah inkompatibilitas dan meningkatkan standar keselamatan yang terkait dengan pemberian sediaan intravena kepada pasien.

Kata Kunci : sediaan intravena, inkompatibilitas fisika, fenitoin, inkompatibilitas kimia, pengetahuan perawat.

ABSTRACT

Intravenous drug administration is widely used in the ICU. However, the risk of incompatibility can occur due to a lack of knowledge of health workers. Incompatibility in intravenous preparations is an undesirable chemical-physical reaction due to the mixing of two or more drug preparations. This study aims to analyze the knowledge of medical personnel about the preparation of IV preparations and assess the completeness of information in intravenous preparation brochures, identify the physical incompatibility of intravenous preparations, determine the differences in chemical incompatibility of various phenytoin preparations, and determine how to handle IV preparation incompatibility in the ICU.

The research method consists of four stages, the first stage uses cross-sectional, questionnaires were used to evaluate the knowledge of medical personnel using IV preparations in 80 health worker respondents. To evaluate the completeness of brochure information, a total of 148 samples of intravenous preparation brochures were evaluated based on the Regulation of the Indonesian Food and Drug Supervisory Agency No. 24 of 2017. The second stage began with prospective data collection using patient medical records that met the research criteria as many as 100 samples, then the drugs given IV were evaluated for incompatibility using references. Drug mixtures that were not in the Lexicomp standard reference and the Handbook on Injectable Drugs 19th edition ASHP'S Guide to IV Compatibility and Stability were tested for physical incompatibility including particle size, turbidity, and viscosity. In the third stage, a physical chemical incompatibility test was carried out on intravenous phenytoin preparations in normal saline solvents from various factories, namely by testing the stability of the preparation, molecular weight, and functional groups of as many as three replications. The fourth stage of the research involved surveying by distributing a questionnaire to medical personnel in the hospital regarding the management of incompatibility in intravenous preparations.

The results of the first phase of the study showed that respondents who understood the reconstitution process were 79 (98.75%), had undergone aseptic training 46 (57.5%), and those who relied on brochures as the main information were 49 (61.25%). Brochure information that included storage was 148 (99%), reconstitution methods 54 (36%), drug incompatibility 28 (19%), drug stability 12 (8%), and a list of excipients 10 (7%). In the second phase of one hundred IV preparation mixtures in the ICU, 68% were known to be compatible (K), 19% incompatible (I), and 13% no information (NI). The results of the physical incompatibility test of 9 IV preparation mixtures that were not in the reference showed an increase in pH, changes in particle size, changes in turbidity, and changes in viscosity. The results of the third phase test showed different instability in phenytoin preparations samples A, B, and C at a concentration of 7 ppm. Physical pH test showed no increase of more than 1 unit from 0, 3, and 6 hours to the three samples and there was an increase in turbidity, this was in accordance with the organoleptic testing of particle size with the formation of needle crystals. Molecular weight testing between pure phenytoin and the precipitated preparation obtained the same results, namely 252 m / z. The fourth stage involved 14 respondents of health workers in the ICU room, it was found that 13 (92.9%) respondents encountered incompatibility events in 7 types of drugs, and 5 (29.4%) respondents encountered incompatibility problems in cefoperazone. Seven (53.8%) respondents stated that incompatibility that often occurs is in the form of color changes in cefoperazone and ceftriaxone preparations, and 6 (46.2%) nurses overcome incompatibility by replacing new preparations. The inclusion of comprehensive information in the brochure is very important to prevent incompatibility and improve safety standards associated with administering intravenous preparations to patients.

Keywords: intravenous preparations, physical incompatibility, phenytoin, chemical incompatibility, nurse knowledge