Arh. farm 2023; 73: S15–S17 ***IL 4***

IZAZOVI U FARMAKOTERAPIJI PACIJENATA NAKON GASTRIČNOG BAJPASA: PREDVIĐANJE APSORPCIJE ORALNO PRIMENJENIH LEKOVA

Sandra Cvijić*

Katedra za farmaceutsku tehnologiju i kozmetologiju, Univerzitet u Beogradu-Farmaceutski fakultet, Beograd, Srbija

*sandra.cvijic@pharmacy.bg.ac.rs

Poslednjih godina gojaznost postaje sve veći zdravstveni problem i za pacijente sa morbidnom gojaznošću operacija želuca, odnosno, gastrični bajpas može da predstavlja najbolje rešenje (1). Međutim, određene bolesti ili stanja koja prate gojaznost ostaju i nakon operacije, što za pacijente podrazumeva kontinuiranu farmakoterapiju. U ovakvim slučajevima posebnu pažnju treba obratiti na terapiju oralnim lekovima, jer kod barijatrijskih pacijenata često postoji potreba za podešavanjem vrste, doze, režima doziranja i/ili farmaceutskog oblika leka (2,3). Naime, izmenjeni fiziološki uslovi nakon operacije mogu značajno da utiču na brzinu rastvaranja i apsorpciju oralno primenjenih lekova, u zavisnosti od osobina lekovite supstance i tipa hirurške procedure. Dodatno, trenutne preporuke za oralnu primenu lekova barijatrijskim pacijentima, kao što su usitnjavanje tableta ili otvaranje kapsula (kada je dozvoljeno), uglavnom ne mogu da prevaziđu probleme vezane za lošu apsorpciju lekova, što dovodi do neuspeha terapije. Alternativni pristup u rešavanju ovakvih izazova predstavlja fiziološki zasnovano biofarmaceutsko modelovanje (PBBM), kompjuterski podržana metoda koja dovodi u vezu karakteristike lekovite supstance i farmaceutskog oblika leka sa specifičnim fiziološkim uslovima, te omogućava predviđanje bioperformansi leka kod određenog pacijenta ili u ciljanoj populaciji pacijenata. U ovom izlaganju će biti ilustrovani koncept i primena PBBM modelovanja za specifičnu populaciju pacijenata, sa fokusom na primere koji opisuju odnos između lek-specifičnih i fizioloških parametara koji utiču na ponašanje leka u organizmu. Izabrani primeri pokazuju kako PBBM predviđanja, u kombinaciji sa in vitro određenim karakteristikama lekovite supstance, mogu da se koriste za dobijanje odgovora na klinički značajna pitanja, poput odabira odgovarajuće terapije za barijatrijske pacijente (4,5).

Literatura

1. Carlsson LMS, Sjöholm K, Jacobson P, et al. Life expectancy after bariatric surgery in the Swedish obese subjects study. N Engl J Med. 2020;383(16):1535-1543.
2. Guedes BL, Montanha MC, Teixeira JJ, et al. Clinicians' prescribing practices for bariatric surgery patients: is there an issue? J Clin Pharm Ther. 2015;40(1):104-109.
3. Kingma JS, Burgers DMT, Monpellier VM, et al. Oral drug dosing following bariatric surgery: General concepts and specific dosing advice. Br J Clin Pharmacol. 2021;87(12):4560-4576.
4. Porat D, Dukhno O, Vainer E, Cvijić S, Dahan A. Antiallergic treatment of bariatric patients: Potentially hampered solubility/dissolution and bioavailability of loratadine, but not desloratadine, post-bariatric surgery. Mol Pharm. 2022;19(8):2922-2936.

5. Porat D, Dukhno O, Partook-Maccabi M, Vainer E, Cvijić S, Dahan A. Selective COX-2 inhibitors after bariatric surgery: Celecoxib, etoricoxib and etodolac post-bariatric solubility/dissolution and pharmacokinetics. Int J Pharm. 2023;645:123347.

Zahvalnica

Priprema rada podržana je od strane Ministarstva nauke, tehnološkog razvoja i inovacija Republike Srbije (Ugovor br. 451-03-47/2023-01/200161).

TACKLING THE CHALLENGES OF PHARMACOTHERAPY IN GASTRIC BYPASS PATIENTS: PREDICTION OF ORAL DRUG ABSORPTION

Sandra Cvijić*

Department of Pharmaceutical Technology and Cosmetology, University of Belgrade-Faculty of Pharmacy, Belgrade, Serbia

*sandra.cvijic@pharmacy.bg.ac.rs

The prevalence of obesity has increased in recent years, and gastric bypass (bariatric) surgery may be the best treatment option for patients with severe (morbid) obesity (1). Yet, bariatric patients often suffer from concomitant diseases that require pharmacological treatment. In this context, special attention should be paid to oral drug dosing, as bariatric patients may need adjusted pharmacotherapy in terms of drug, dose/dosing regimen and/or dosage form selection (2,3). Namely, altered physiological conditions after bariatric surgery can markedly affect dissolution and absorption of orally administered drugs, depending on drug properties and the type of bariatric procedure. In addition, currently suggested approaches for oral drug administration in bariatric patients, such as crushing tablets or opening capsules (when permitted), generally fail to address the issues related to poor drug absorption, resulting in therapeutic failures. An alternative to tackle these challenges is physiologically based biopharmaceutical modeling (PBBM), a computer-based tool that relates drug and dosage form properties to specific physiological conditions, thus allowing prediction of drug bioperformance in a target patient or population group. This presentation will illustrate the concept and implementation of PBBM modeling for special patient population, focusing on the examples describing the interplay between drug-specific and physiologically relevant parameters that determine drug performance in vivo. The selected examples will demonstrate how PBBM predictions can be used in conjunction with in vitro data on drug properties to answer clinically relevant questions, such as selecting appropriate drug therapy in bariatric patients (4,5).

References

6. Carlsson LMS, Sjöholm K, Jacobson P, et al. Life expectancy after bariatric surgery in the Swedish obese subjects study. N Engl J Med. 2020;383(16):1535-1543.
7. Guedes BL, Montanha MC, Teixeira JJ, et al. Clinicians' prescribing practices for bariatric surgery patients: is there an issue? J Clin Pharm Ther. 2015;40(1):104-109.
8. Kingma JS, Burgers DMT, Monpellier VM, et al. Oral drug dosing following bariatric surgery: General concepts and specific dosing advice. Br J Clin Pharmacol. 2021;87(12):4560-4576.
9. Porat D, Dukhno O, Vainer E, Cvijić S, Dahan A. Antiallergic treatment of bariatric patients: Potentially hampered solubility/dissolution and bioavailability of loratadine, but not desloratadine, post-bariatric surgery. Mol Pharm. 2022;19(8):2922-2936.
10. Porat D, Dukhno O, Partook-Maccabi M, Vainer E, Cvijić S, Dahan A. Selective COX-2 inhibitors after bariatric surgery: Celecoxib, etoricoxib and etodolac post-bariatric solubility/dissolution and pharmacokinetics. Int J Pharm. 2023;645:123347.

Acknowledgements

This work is supported by the Ministry of Science, Technological Development and Innovation, Republic of Serbia (Grant Agreement No. 451-03-47/2023-01/200161).