LETTER

Effectivity of hemodialysis in acute gastrointestinal bleeding associated with dabigatran overdose

C. Kilit[1], S. Erarslan[2], T. Pasali Kilit[3]

(1) Department of Cardiology, Dumlupinar University School of Medicine, Kutahya, Turkey ; (2) Department of Internal Medicine, Dumlupinar University, Kutahya Evliya Celebi Training and Research Hospital, Kutahya, Turkey ; (3) Department of Internal Medicine, Dumlupinar University School of Medicine, Kutahya, Turkey.

To the Editor,

Novel oral anticoagulants (NOACs) have become available as alternatives for warfarin in patients with nonvalvular atrial fibrillation (AF). NOACs directly inhibit either factor IIa (dabigatran) or activated coagulation factor X. Limitations to the use of the NOACs include the lack of a reversal agent ; an inability to use the therapies in specific patient populations and a lack of available coagulation tests to quantify their effects. There are no published clinical trials or other high-quality evidence addressing the management of gastrointestinal (GI) bleeding on NOACs ; thus, most current recommendations are based on experts' opinions (1).

A 75-year-old woman with non-valvular AF ongoing 10 years presented with complaints of confusion, weakness, hematemesis and melena. Previously warfarin was initiated because of nonvalvular AF but as a result of GI bleeding due to the warfarin overdose, the patient was prescribed dabigatran 150 mg twice daily. At that time, CrCl calculated by Cockcroft-Gault formula was 24.1 ml/minute. The recommended dose of dabigatran is 110 mg twice a day in patients with high GI bleeding risk according to the product information. Laboratory test results of patient shown in Table 1. The patient was admitted to the intensive care unit with a diagnosis of upper GI bleeding, acute renal failure and dabigatran overdose. The patient underwent hemodialysis twice within 24 hours. PT, aPTT and INR values decreased and active GI bleeding stopped after hemodialysis. Gastric endoscopy was normal. The patient was discharged on 110 mg dabigatran treatment twice daily.

Table 1. — **Laboratory test result of the patient**

	Admission	After first hemodialysis	After second hemodialysis	Before discharge
BUN (mg/dL)	136	37	35	15
Creatinine (mg/dL)	2.07	1.04	0.85	0.51
AST (U/L)	91	86	53	22
ALT (U/L)	168	104	77	23
HGB (g/dL)	12.4	11.2	10.1	10.6
HCT (%)	37.9	33.9	30.8	32.7
aPTT (sec)	167.0	41.3	29.2	34.7
PT (sec)	16.7	14.0	17.4	13.0
INR	1.46	1.23	1.53	1.14

ALT : Alanine aminotransferase, aPTT : Activated partial thromboplastin time, BUN: Blood urea nitrogen, HCT : Hematocrit, HGB: Hemoglobin, INR : International normalized ratio, PT : Prothrombin time.

A major disadvantage of dabigatran is the lack of a reversal agent in clinical use. The manufacturer of dabigatran submits applications for approval of a humanized antibody fragment named idarucizumab in patients needing emergency intervention or experiencing an uncontrolled or life-threatening bleeding event. Hemodialysis can be used to reduce the plasma concentration of dabigatran rapidly and efficiently (65% at 2-4 h), and it is considered the most effective strategy for dabigatran-associated bleeding in patients with renal failure ; however, it is not effective for other NOACs that are bound to plasma proteins in higher proportions than dabigatran. If the patient is not hemodynamically stable, recombinant factor VIIa and prothrombin complex concentrates should be considered as potential second-line therapy (2). According to the expert's opinions, in patients with significant bleeding without hemodynamic compromise, symptomatic treatment with fluid replacement is generally sufficient (3). Hemodialysis may be preferred as a treatment option in hemodynamically stable patients with significant GI bleeding associated to dabigatran.

References

1. MAKRIS M., VAN VEEN J.J., TAIT C.R., MUMFORD A.D., LAFFAN M. British Committee for Standards in Haematology. Guideline on the management of bleeding in patients on antithrombotic agents. *Br. J. Haematol*., 2013, **160** : 35-46.
2. KALUS J.S. Pharmacologic interventions for reversing the effects of oral anticoagulants. *Am. J. Health Syst. Pharm*., 2013, **70**(10 Suppl 1) : S12-21.
3. RADAELLI F., DENTALI F., REPICI A., AMATO A., PAGGI S., RONDONOTTI E. *et al*. Management of anticoagulation in patients with acute gastrointestinal bleeding. *Dig. Liver. Dis*., 2015, Apr 13 [Epub ahead of print], doi : 10.1016/j.dld.2015.03.029.

Correspondence to : Dr. Celal Kilit, Department of Cardiology, Dumlupinar University, Kutahya Evliya Celebi Training and Research Hospital, 43050, Kutahya, Turkey
E-mail : ckilit@hotmail.com

Submission date : 09/06/2015
Acceptance date : 21/09/2015