Cerebral infarction accompanied by cerebral bleeding in patients receiving apixaban

Takao Kato,¹ Masahiro Kimura,¹ Moriaki Inoko²

¹Department of Cardiovascular Medicine, The Tazuke Kofukai Medical Research Institute, Kitano Hospital, Osaka, Japan
²Cardiovascular Centre, The Tazuke Kofukai Medical Research Institute, Kitano Hospital, Osaka, Japan

Correspondence to

Dr T Kato,
 takao-kato@kitano-hp.or.jp

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DESCRIPTION

Apixaban is a novel anticoagulant (NOAC) that is superior to warfarin in preventing stroke and minimising bleeding.¹ A 58-year-old man was admitted to our hospital for congestive heart failure (CHF) due to a recent myocardial infarction. He had diabetes, hypertension, persistent atrial fibrillation and renal dysfunction. He had no history of hepatitis but was a past heavy drinker. Percutaneous coronary intervention was performed using a second generation drug eluting stent, and administration of 100 mg aspirin, 75 mg clopidogrel and 5 mg apixaban was started. His CHADS₂-VASc (CHF, hypertension, diabetes mellitus and vascular event) score was 4. After 4 months, he complained of dizziness for 3 weeks. Neurological findings apart from dizziness were not observed. MRI revealed a subacute cerebral infarction with

haemorrhage at the right temporal lobe (figure 1A, B) without haematoma on CT (figure 1C). The HAS-BLED score was 1 (antiplatelet drug). However, careful reassessment before starting apixaban revealed that prothrombin time was slightly prolonged (figure 2). With a decreased platelet count, liver dysfunction was suspected. Finally, CT revealed decreased liver volume and the presence of liver cancer. CHF often accompanies liver dysfunction.² Liver function was carefully examined as apixaban is partially metabolised to CYP3A4/5 in the liver. Because the risk of cerebral infarction and intracranial haemorrhage during NOAC treatment seems to be small to moderate,^{1,3} mild symptoms without neurological deficit may need to be carefully assessed. Apixaban and aspirin were continued, and clopidogrel was discontinued, taking into consideration the risks and benefits.

Figure 1 (A, B) High intensity on T2 weighted (A) and low intensity on T1 weighted (B) MRIs, indicating subacute haemorrhage accompanied by cerebral infarction. (C) CT image.

Before administration				At onset			
Bp (mmHg)	100/70	ALT (U/L)	43	Bp (mmHg)	109/70	ALT (U/L)	34
APTT (s)	29.7	TP (g/dL)	7.2	APTT (s)	35.7	TP (g/dL)	7.2
PT (INR)	1.14	ALB (g/dL)	3.8	PT (INR)	1.46	ALB (g/dL)	3.6
Cre (mg/dL)	1.25	T-chol (mg/dL)	237	Cre (mg/dL)	1.71	T-chol (mg/dL)	147
BUN (mg/dL)	16.7	PLT (/μL, x10 ⁴)	15.1	BUN (mg/dL)	26.7	PLT (/μL, x10 ⁴)	9.8
AST (U/L)	83			AST (U/L)	39		

Figure 2 Summary of laboratory findings. ALB, albumin; ALT, alanine aminotransferase; APTT, activated partial thromboplastin time; AST, aspartate transaminase; Bp, blood pressure; BUN, blood urea nitrogen, Cre, creatinine; PLT, platelet; PT, prothrombin time; T-chol, total cholesterol; TP, total protein.

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Learning points

- ▶ Due to administration of new drugs, complications related to apixaban administration are seldom encountered by the next cardiologist; hence experiences should be shared between cardiologists.
- ▶ Because the risk of cerebral infarction and intracranial haemorrhage during novel anticoagulant treatment seems to be small to moderate, mild symptoms without neurological deficit may also need to be examined during follow-up.
- ▶ Liver function, along with renal function, should be carefully assessed and monitored during apixaban treatment.

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Competing interests None.

Patient consent Obtained.

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REFERENCES

- 1 Hylek EM, Held C, Alexander JH, *et al.* Major bleeding in patients with atrial fibrillation receiving apixaban or warfarin: The ARISTOTLE Trial (Apixaban for Reduction in Stroke and Other Thromboembolic Events in Atrial Fibrillation): Predictors, characteristics, and clinical outcomes. *J Am Coll Cardiol* 2014;63:2141–7.
- 2 Kato T, Niizuma S, Inuzuka Y, *et al.* Analysis of liver metabolism in a rat model of heart failure. *Int J Cardiol* 2012;161:130–6.
- 3 Shah R, Shah D, Koganti S, *et al.* Intracerebral haemorrhage, anticoagulation and mechanical heart valves: what should I do next? *BMJ Case Rep.* Published: 26 Jun 2013. doi:10.1136/bcr-2013-008639

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