



A comment on Laboratory monitoring of new anticoagulants

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To the Editor: In their recent paper, D.D. Castellone and E.M. Van Cott review recent developments in laboratory and bedside testing for some of the newest anticoagulants [1].

This review is a clear and easily understandable tool for clinicians, which provides a comprehensive summa of available and lesser available laboratory tests for their preferred anticoagulants (both factor IIa or factor Xa inhibitors).

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However, I would like to expand on bivalirudin management in the cardiovascular area.

Bivalirudin is a synthetic polypeptide that binds to an active site of thrombin, blocking it; it has a short half-life (20-25 minutes) and only 20% of it is renally excreted.

This drug is currently indicated for the management of patients suffering acute coronary syndromes undergoing coronary angioplasty and for patients undergoing elective angioplasty. It is also indicated for patients with (or at risk for) heparin induced thrombocytopenia undergoing PCI (U.S.A.).

Regarding drug monitoring, the authors state that the aPTT monitoring is currently adopted; however, they state, this test is not ideal due to inaccuracy at high drug dosages. The authors conclude that a more precise evaluation of the anticoagulant effect of bivalirudin could be achieved with complex laboratory tests, such as the chromogenic anti-factor IIa assay, or the Ecarin Clotting Time.

In the catheterization laboratory, unlike unfractionated heparin which needs frequent monitoring of activity and is usually given with multiple intravenous boluses, bivalirudin is given with a bolus dose of 0.75 mg/kg followed by an infusion of 1.75 mg/kg/h for the duration of the procedure and possibly with a further infusion of 0.25 mg/Kg/h for 4 hours following the angioplasty (the prolonged infusion after PCI has been approved in Europe and has shown to reduce the risk and extent of peri-procedural myocardial infarction) [2].

Otherwise, the USA/FDA approved package insert also says that “Continuation of the Angiomax infusion following PCI for up to 4 hours post-procedure is optional, at the discretion of the treating physician. After 4 hours, an additional IV infusion of Angiomax may be initiated at a rate of 0.2 mg/kg/h for up to 20 hours, if needed.” That’s all. No further monitoring is needed with this drug, because if its activity on laboratory monitoring (e.g., the aPTT or the Activated Clotting Time) is unpredictable, its biological and clinical activity is reliable. In fact, bivalirudin has been shown to exert an antithrombotic efficacy comparable to that of heparin with or without glycoprotein IIb/IIIa inhibitors, warranting fewer bleedings [3, 4].

In case of hemorrhages the infusion should be interrupted because an antidote is not available and its half life is short. Bivalirudin is hemodialyzable. Activated Clotting Time monitoring is --preferable only in patients with renal impairment, where bivalirudin’s half life is prolonged. In case of severe renal impairment (hemodialysis or creatinine clearance <30 ml/min) it is contraindicated (Europe).

Therefore, in my opinion, the highly predictable biological effect and the safety of this drug render its monitoring unnecessary (and too expensive), at least in the vast majority of patients undergoing coronary angioplasty.

REFERENCES

1. Castellone DD, Van Cott EM. Laborastory monitoring of new anticoagulants. Am J Hematol 2010;85:185-187.
2. Cortese B, Picchi A, Micheli A, et al. Comparison of prolonged bivalirudin infusion versus intraprocedural in preventing myocardial damage after percutaneous

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coronary intervention in patients with angina pectoris. *Am J Cardiol* 2009;104(8):1063-1068.

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3. Stone GW, McLaurin BT, Cox DA et al. Bivalirudin for patients with acute coronary syndromes. *N Engl J Med* 2006;355: 2203–2216.

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4. Kastrati A, Neumann FJ, Mehilli J, et al. Bivalirudin versus unfractionated heparin during percutaneous coronary intervention. *N Engl J Med* 2008;359:688-696.

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