

### The use of porcine derived low molecular weight heparins in Muslims

Mir Sadat-Ali, FRCS, PhD,  
Haifa A. Al-Turki, SSC, ABOG.

Anti-thrombotic drugs are an essential part of the management and prevention of the risk of venous thrombo-embolism (VTE). The National Institute for Health and Clinical Excellence (NICE) has produced guidelines to assist in reducing this risk.<sup>1</sup> The risk of fatal embolism after high-risk surgery is 1-5%. In orthopedic and gynecological surgeries anti-thrombotics are widely used because VTE in patients undergoing total hip and knee arthroplasty, hip fractures and in pregnancy is well known. Thrombo-prophylaxis can be achieved by non pharmacological methods such as early ambulation, elastic compression stockings, pneumatic compression devices, and/or by pharmacological methods. Oral or injectable drugs are in use in the thrombo-prophylaxis. Oral drug includes aspirin, warfarin and novel anticoagulants like dabigatran, rivaroxaban, apixaban of synthetic origin. The injectable anticoagulants in regular use are unfractionated heparin (HNF), low molecular weight heparin (LMWH) and synthetic factor Xa indirect inhibitor Fondaparinux. Heparin was initially extracted from the intestinal mucosa of cows and pigs. Most of the LMWH like Enoxaparin sodium, Dalteparin, Nardoparin, Bemiparin, and Tinzaparin are porcine derived. Enoxaparin sodium (Clexane and Clexane Forte) is obtained by alkaline depolymerisation of heparin benzyl ester derived directly from porcine intestinal mucosa.<sup>2</sup> Unfortunately this important information, which is available on the manufacturing company's website, remains missing from the prescription information sheet provided with the drug. In Islam, it is strictly prohibited to use porcine derived products in any kind. The scholars of the Standing Committee for Issuing Fatwas (Shaikh Abd al-Azeez ibn Baaz, Shaikh Abd al-Razzaq Afeefi, Shaikh 'Abd-Allaah ibn Ghadyaan, Shaikh 'AbdAllaah ibn Qa'ood. Fataawa al-Lajnah al-Daa'imah (22/281), noted that even If a Muslim is in doubt that the products to be used contain any pork, lard (pig fat), or ground up pig bones in food, medicine, toothpaste, and so on, then it is not permissible for him to eat it or drink it, or apply it to his skin.<sup>3</sup> On the other hand, scholars also believe that in case of non-availability of some life saving medications, porcine products could be

used.<sup>4</sup> Easterbrook and Maddern (2008)<sup>5</sup> suggested that in case of the use of porcine products the surgeons duty of care is to take the informed consent before using to avoid religious distress and possible litigation.

In King Fahd Hospital of the University, Al-Khobar and in other hospitals of Saudi Arabia Enoxaparin sodium is widely used and the drug information sheet does not give any details about its origin. Authors realized this issue lately with concern. Till now, in our ignorance about its origin, we have been using the porcine derived anti-coagulant without proper consent from the patients. We believe that with the availability of other pharmaceutical agents to prevent VTE, it is not prudent that a porcine derived product could be used among Muslims without an informed consent.

In conclusion, we believe that it is the prime duty of the treating physician and surgeon to obtain a full informed consent from the Muslim patients before porcine derived products are used and it should be limited to life saving situations. With the current availability of synthetic anti-thrombotic drugs that can be used for prophylaxis of VTE, it would be naïve to use porcine derived products in Muslims.

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From the Departments of Orthopedic Surgery (Sadat-Ali) and Obstetrics and Gynecology (Al-Turki), College of Medicine, University of Dammam and King Fahd Hospital of the University, Alkhobar, Kingdom of Saudi Arabia. Address correspondence and reprints request to: Prof. Mir Sadat-Ali, Department of Orthopedic Surgery, College of Medicine, University of Dammam and King Fahd Hospital of the University, Alkhobar 31952, Kingdom of Saudi Arabia. Tel. +966 505848281. Fax. +966 (3) 8820887. E-mail: drsadat@hotmail.com

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