



Religious-related concerns and animal-derived medications during anesthetic care

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ABSTRACT

Peoples following some religions might have some specific beliefs regarding the consumption and utilization of animal-derived products, and their beliefs might have the potential to affect medical care. Literature regarding the use of porcine and bovine derived medications and medical devices for patients who practice Judaism, Islam, and Hinduism is limited. Consideration and knowledge of these issues is necessary to facilitate successful communication with a diverse patient population and respect her religious convictions.

We present a report of a 20-year-old patient of the Islamic faith who required anticoagulation following a lower extremity orthopedic procedure. The family and patient requested no porcine-derived medications, thereby precluding the use of subcutaneous low molecular weight heparin. Issues surrounding religious concerns regarding animal-derived medications and healthcare products are reviewed and options for effective care in such circumstances outlined.

Key words: Porcine-derived medications; Bovine-derived products; Religions; Religious convictions; Jehovah's witnesses

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INTRODUCTION

Religious reservations to some particular types of medical care have created ethical issues regarding patient care. One of the more researched and well-known religious reservation regarding medical care is, the objection to, and refusal of blood and blood products by people of the Jehovah's Witness faith.¹ However, various religions may also have beliefs

regarding the consumption and utilization of animal-derived products, which have the potential to affect medical care related to animal-derived medications and products. Many such products may not even be considered and known to be animal-derived during their use. For example, gelatin capsules, surfactants, and surgical implants may be derived from porcine or bovine material.²⁻⁴ The literature regarding the use of porcine and bovine derived medications and medical

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devices for patients who practice Judaism, Islam, and Hinduism is limited.^{2,5-7} It is imperative that physicians and healthcare providers have information regarding animal-derived products to allow for successful communication with a diverse patient population and respect their religious convictions. We present a case report of a 20-year-old patient of the Islamic faith, who required anticoagulation following a lower extremity orthopedic procedure. The family and the patient requested not to use porcine-derived medications, thereby precluding the use of subcutaneous low molecular weight heparin. Issues surrounding religious concerns regarding animal-derived medications and healthcare products are reviewed and options for effective care in such circumstances outlined.

CASE REPORT

Institutional Review Board approval is not required at our hospital for the presentation of single case reports. A 20-year-old, 58.7 kg, Muslim woman with type 3 osteogenesis imperfecta, presented for femoral osteotomy and fixation after sustaining a left femur fracture due to falling from her wheel chair. Her past medical history was positive for osteoporosis, allergic rhinitis, gastroesophageal reflux disease (GERD), asthma, and kidney stones. Past surgical history was negative, but she had previously sustained multiple fractures that were treated conservatively. Prior to surgery, she had severe bowing deformities of both of her femurs, and had to use a wheelchair for mobilization. Two days earlier, she sustained fracture of her left femur and was admitted to the inpatient ward through the emergency department. She was placed on aspirin (325 mg daily) for deep vein thrombosis (DVT) prophylaxis and the femur was placed in traction while waiting for the surgical equipment to arrive. She was expected to require fixation of the right femur as well, depending on the success of fixation of the left femur. She was on several medications for the treatment of GERD, osteoporosis, and asthma including cephalexin (500 mg by mouth twice a day), fluticasone (1 spray in each nostril daily), cetirizine (10 mg by mouth once a day), ondansetron (4 mg by mouth every 8 h as needed), famotidine (20 mg by mouth twice a day), potassium citrate (10 mEq by mouth twice a day), calcium carbonate (500 mg by mouth three times a day), albuterol meter dosed inhaler (2 puffs every 4 h as needed), beclomethasone (2 puffs twice a day), cholecalciferol (4,000 unit by mouth once a day), omeprazole (20 mg by mouth once a day), and amitriptyline (10 mg by mouth once a day). The allergy list on her electronic medical record

included nuts, eggs, pineapple, as well as pork/porcine containing products. The latter was related to religious concerns and not a true allergy. Physical examination revealed a patient in no acute distress in a motorized wheelchair. She was noted to have bowing deformities of the femurs bilaterally and brittle discolored teeth. Her vital signs were within normal limits. Airway examination revealed a Mallampati grade II. Her cardiovascular and pulmonary examinations were unremarkable. Preoperative laboratory parameters included hemoglobin 12.0 gm/dL, hematocrit 34.1%, and a normal platelet count. Electrolytes and renal function were normal. The patient was transported to the operating room and routine American Society of Anesthesiologists' standard monitors were placed. Anesthesia was induced while the patient was still in her hospital bed because of severe pain with motion. Medications for anesthetic induction included propofol (150 mg), fentanyl (100 µg), and lidocaine (60 mg) followed by neuromuscular blockade with rocuronium (50 mg) and endotracheal intubation. She was then transferred to the operating table. An epidural catheter was placed at the L1-2 interspace. Intraoperatively, propofol, fentanyl (100 µg), and rocuronium (50 mg) were continued. To facilitate intraoperative monitoring, an arterial cannula was placed. Maintenance anesthesia included sevoflurane, fentanyl, and ongoing neuromuscular blockade with intermittent rocuronium. The procedure lasted approximately 6 h. No intraoperative complications were noted and at the completion of the procedure, residual neuromuscular blockade was reversed with sugammadex and the patient's trachea was extubated. She was transferred to the post-anesthesia care unit (PACU) in stable condition and then to the Intensive Care Unit for ongoing blood pressure monitoring. Due to the need for postoperative immobilization, the primary orthopedic service requested DVT prophylaxis. Although their preference was the use of low molecular weight heparin, the patient and family expressed religious reservations to its use as it is animal-derived (porcine). Hematology consultation was obtained and the patient was started on the direct thrombin inhibitor, rivaroxaban, after the epidural catheter was removed on postoperative day 2. Additionally, consultation with the hospital pharmacy service was initiated to ensure the avoidance of porcine-derived medications. The patient's postoperative course was unremarkable.

DISCUSSION

Medications, wound dressings, and implanted surgical devices may be derived from natural sources,

including plants, minerals, animals, and even micro-organisms in the case of certain antibiotics.⁸ Some of the most common and earliest animal-derived medications included heparin, insulin, and pituitary hormones. These drugs have saved countless lives throughout the past century. The methods that were once used to discover and purify these medications have been modernized and continued into the modern era. Medications and medical products that are derived from animals may contain active animal constituents or inert, inactive ingredients, which are included to produce an effective vehicle for the medication.⁹ Regardless, these animal-derived ingredients may have implications for patients with religious objections to consuming animal-derived products.

Common porcine or bovine-derived products that contain active ingredients include heparin, pulmonary surfactants, and digestive supplements such as pancreatic enzymes.⁹ Additional animal-derived drugs or products include amoxicillin, omeprazole, warfarin, prednisolone, oxinorm, dressings (hydrocolloids, split skin grafts), and surgical products/implants such as mesh, bone, orthopedic spacers, and matrix hemostasis.¹⁰ Gelatin, which is derived from collagen, is widely used to encapsulate or as a vehicle for medications. The collagen is derived from the skin and bones of cows and pigs. Other products that are made from animal-derived collagen include augmentation or substitution materials such as Surgibone[®] (Advanced Surgical Technologies, Melbourne Australia), temporary collagen implants (Designs for Vision, Sydney, Australia), and Pyrost[®] bone substitutes (Stryker, Sydney Australia), tissue reconstructive materials such as Integra[®] artificial skin (Integra Neurosciences, Carnegie, Australia), and Collacote[®],

Collatape[®], and BioMend[®] (Monarch Medica Australia, Frenchs Forest, Australia). Additional collagen-derived products include hemostatic materials such as Avitene[™] (C.R. Bard Inc., Australia), prostheses, blood vessel, and biological materials such as BioNova[®] vascular graft (Bio Nova International Pty Ltd, Melbourne, Australia), and sutures and ligatures such as plain gut sutures and chromic gut sutures (Dyneck P/L, Hendon, Australia and Johnson & Johnson, Cincinnati, OH).⁸ Alternatively, some products may come from animals such as mares, snakes, fish, leeches, and Gila monsters.¹¹ These latter products are less likely to be objected to from a religious perspective, but could have implications for patients who do not consume animals in their diets for religious or personal reasons.

Another step in facilitating and ensuring that physicians maintain open communication with their patients could be determining if animal-derived medications should be labeled and if informed consent is required before physicians administering animal-derived medications. Past studies have suggested that it is necessary to obtain informed consent for the use of animal or human derived products for several religious groups, since they may oppose the treatment.^{5,10} Currently there is no centralized information database available for either patients or physicians regarding animal-derived ingredients in medications, implants, or dressings.^{2,5-7} If these medications and medical products were labeled, and if this information were easily accessible, it could save physicians and patients time as well as prevent physicians from unintentionally violating their patients' religious tenets. With this knowledge, physicians and the health care team can make appropriate adjustments, such as labeling patients' charts and notifying the pharmacy to ensure that

Box 1: Approach with faith or religious-related objections to medications

1. A discussion with the question: do you have any faith or religious-based objections to medications, medical products or medical care?
2. When objections or concerns are raised, there should be an investigation and evaluation as to whether specific medications or products to be used contain animal products.
3. Involvement of pharmacy and consulting services to determine possible alternatives.
4. Involvement of the patient's local religious organization and leaders if approved by the patient.
5. If there are no alternatives available, discuss with the patient their actual religious tenets and the law to determine the optimal care for the patient.
6. Label the patient's chart. Although this can be listed as an allergy, it may be better to use a separate notation such as religious-based objections to medications, medical products or medical care.

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patients receive the treatment that they want. Prior to surgery, aspirin was used for DVT prophylaxis in our patient. As she had previously developed a DVT, she required anticoagulation postoperatively. Due to her religious concerns and given that there was an acceptable alternative available; a direct thrombin inhibitor (rivaroxaban) was used in place of low molecular weight heparin.¹²

It is important for physicians and other health care providers to realize that their patients may object to medical care based on their religious beliefs. Animal-derived medication and medical products should be labeled so that physicians can easily determine if they need to discuss alternative options with their patients. It would also be beneficial if an information database was created that lists medications and medical products derived from animals. One such list which may be useful can be found at https://www.health.qld.gov.au/_data/assets/pdf_file/0024/147507/qh-gdl-954.pdf.

Jewish and Muslim patients who follow Kosher and Halal regulations are prohibited from eating pork or pork-derived products, which they may believe includes the systemic administration of porcine heparin and other animal-derived medications and products. Because heparin is not taken by the enteral route, most Jewish leaders have stated that Jewish dietary laws do apply, so porcine heparin can be used. In addition, the law of medical necessity (see below)

can be applied to medications that may otherwise be prohibited. However, this may still be an issue with more conservative orthodox sects.

We would suggest a simple stepwise approach when dealing with such issues that would include the following items listed in the Box 1. For specific religious groups, there may be formal recommendations. We found the following from the ethics committee of the Islamic Medical Association of North America (<https://imana.org/use-of-heparin/>) which outlines their interpretation and when the use of an animal-derived product such as heparin is permissible. For Muslim patients, the Islamic Medical Association of North

America's ethics committee states that the use of porcine heparin is permitted for Muslim patients based on multiple rules including: 1) necessity makes prohibited things lawful; 2) if there are 2 evils, then you use the lesser one. In this case, the bigger evil is that refusal of heparin may lead to significant morbidity or mortality; and 3) as long as there is some modification of the original porcine product, then it is appropriate to use it.

Conflict of interest:

Authors' contribution:

HD, AS, MA, DT – Conduction of study, manuscript editing
JDT – Concept, conduction of study, manuscript editing

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