Inappropriate Use of Anticoagulant Drugs in Older Adults

Indiscriminate or inappropriate drug use in older adults is a common and serious problem that can increase mortality and morbidity as a result of deterioration of bodily functions (Fu, Liu, & Christensen, 2004). Inappropriate use of anticoagulant drugs has recently gained interest due to the potential risk of hemorrhage. Warfarin (Coumadin®), which is used for atrial fibrillation, mechanical heart valves, and ischemic attacks, is the most commonly implicated drug of emergency hospitalizations for adverse drug reactions in older adults. Approximately 50% of these hospitalizations involve adults older than 80, with hemorrhage being the primary adverse event (Budnitz, Lovegrove, Shehab, & Richards, 2011). Inappropriate use of warfarin can cause serious hemorrhage in the intracranial area and gastrointestinal system, as well as in the respiratory and genitourinary systems, with risk for fatality. Interestingly, anticoagulant-related major hemorrhage is observed more frequently in older patients (age >75) than in younger patients (Levine, Raskob, Beyth, Kears, & Schulman, 2004). The mechanism of how aging causes hemorrhage is unknown, but increasing evidence supports that age is an independent factor for major hemorrhage (Levine et al., 2004). Although novel anticoagulant agents (e.g., dabigatran [Pradaxa®], rivaroxaban [Xarelto®], and apixaban [Eliquis®]) have long been anticipated as alternatives to warfarin, the lack of reversal agents, increased risk of gastrointestinal bleeding, and limited evidence in the older adult population are serious concerns (Ogbonna & Clifford, 2013).

Inappropriate drug use has also been observed among hospitalized patients and can affect length of stay (Onder et al., 2003). We present one such case from our hospital. An 82-year-old man was hospitalized to undergo total knee arthroplasty. His medical history revealed atrial fibrillation, with irregular use of metoprolol succinate 50 mg and warfarin sodium 5 mg; however, the patient stated he had not used either medication in the previous 5 days. Preoperative tests, including international normalized ratio (INR), were within normal limits. The chosen anesthetic plan was combined spinal/epidural anesthesia. The operation was completed uneventfully. A continuous epidural infusion of bupivacaine 0.25% was administered for postoperative analgesia. The epidural catheter was scheduled to be removed on the third postoperative day; however, catheter removal was delayed due to an INR of 4.2. The patient was closely monitored for signs of spinal hematoma. Repeated, detailed, and insistent questioning by nurses revealed that he had taken warfarin sodium 5 mg tablets for 3 days during the postoperative period, assuming it to be an analgesic. His cognitive functions were normal, but he was resistant to cooperate. He did not realize the importance of the potential complications due
to his poor educational background. During the next 2 days, the effects of warfarin were reversed using fresh frozen plasma and vitamin K. His INR reduced to 1.6, and the epidural catheter was removed with caution on the fifth postoperative day.

Anticoagulant drugs can increase the risk of spinal/epidural hematoma during regional anesthesia (Butwick & Carvalho, 2010). This risk is increased particularly at the initiation of regional block or removal of an epidural catheter (Hantler, Despotis, Sinha, & Chelly, 2004). The most serious bleeding-related complications are potential transient or permanent neurological dysfunctions due to compression on the spinal cord (Hantler et al., 2004). In our case, inappropriate use of warfarin dramatically increased the risk of epidural hematoma and extended the length of hospitalization.

Inappropriate drug use is associated with old age, the presence of chronic diseases for which the patient is required to receive many drugs, cognitive dysfunction, and poor educational background (Haider, Johnell, Weitoft, Thorslund, & Fastbom, 2009; Onder et al., 2003). We believe the age of the patient (82 years) and his poor educational background were the effective factors in our case.

Nurses and physicians should be aware that older adults are at high risk for medication errors and potential inappropriate medication use. We must increase our knowledge about medication safety, adverse drug reactions, and drug-drug interactions (American Geriatrics Society 2012 Beers Criteria Update Expert Panel, 2012). More nursing attention is critically necessary for these patients. Detailed and insistent questioning about the medications a patient may be taking should be performed at admission, as well as subsequent intervals, to prevent potential complications.

Until better alternatives become available, older adults taking warfarin or similar agents remain at high risk for complications. Physicians and nurses need to be on the frontline of assessing these patients. They should closely monitor patients after a fall and regularly assess the risk–benefit ratio in older adults who fall frequently. Occasionally, in cases of multiple comorbidities and increased risk of injurious falls, clinicians may decide not to initiate any anticoagulant therapy (Ogbonna & Clifford, 2013).

Inappropriate use of anticoagulant drugs may also cause significant complications in patients who undergo surgical procedures with regional anesthesia/analgesia. Nurses and physicians should therefore assess these patients carefully, monitoring for symptoms of epidural/spinal hematoma.

Mental status should also be assessed when determining the ability of older adults to perform self-care and self-administer medications. The role of nurses in educating older adults and their families about correct medication management is crucial.

**REFERENCES**


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