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The relationship between vitamin K content in the body and insufficient coagulation control

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Abstract

We have previously measured blood levels of warfarin, vitamin (V) K_1, menaquinone (MK)-4, MK-7, VK_1-epoxide, protein induced by vitamin K absence or antagonists (PIVKA)-II, protein C antigen (PC-Ag) and prothrombin fragment 1+2 (F_{1+2}) in patients after prosthetic valve replacement. We retrospectively investigated the relationship between poor coagulation control and inhibitory effects of the vitamin K cycle during the administration of warfarin to the patients. On postoperative day (POD)-7, the patients were classified into 2 groups: group A consisted of patients receiving 5 mg/day or more of warfarin, and group B consisted of patients receiving 3 mg/day warfarin. Blood samples were collected before surgery, and on postoperative day (POD)-7, POD-14, and POD-21. On POD-7, PT-INR values were lower than those in group B, but PC-Ag levels in group A were higher. On POD-7 and -14, VK_1 levels in group A were higher than those in group B, but PIVKA-II levels in group A were lower. On POD-14 and -21, both levels of VK_1-epoxide and F_{1+2} in group A were higher than those in group B. The inhibition of the vitamin K cycle may be inadequate in patients who receive warfarin in a dosage of 5 mg/day or more (difficult control of coagulability) owing to the abundance of vitamin K in the body. Therefore, these patients may be at a greater risk of postoperative thrombosis after valve replacement surgery.

Biography

Kazuo Nakamura has completed his Ph.D at the age of 37 years from Kagoshima University and postdoctoral studies from Department of Clinical Pharmacy and Pharmacology, Graduate School of Medical and Dental Sciences, Kagoshima University. He is the professor of Nihon Pharmaceutical University. He has published more than 25 papers in reputed journals and serving as a councilor of The Japanese Pharmacological Society.

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