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Bleeding Risk Related to Upper Gastrointestinal Endoscopic Biopsy in Patients Receiving Antithrombotic Therapy: A Multicenter Prospective Observational Study

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ABSTRACT

Background: Although antithrombotic agents are widely used for cardiac and cerebrovascular disease prevention, they increase the risk of gastrointestinal (GI) bleeding.
Objective: To examine GI bleeding risk in association with an esophagogastroduodenoscopy (EGD) biopsy performed in patients without cessation of antithrombotic therapy.
Methods: This study was prospectively conducted at 14 centers. EGD biopsies were performed in patients receiving antithrombotic agents without cessation, as well as age- and sex-matched controls not receiving antithrombotic therapy. Patients treated with warfarin before the biopsy had a prothrombin time-international normalized ratio level < 3.0. The proportion of GI bleeding events was compared between the groups.
Results: The patient group (n = 277) underwent a total of 560 biopsies while continuing antithrombotic therapy, of whom 24 were receiving multiple antiplatelet drugs, and 9 were receiving both antiplatelet and anticoagulant agents. The control patients (n = 263) underwent 557 biopsies. The upper-GI bleeding rate within 30 days after the EGD biopsy did not increase in patients without cessation of antithrombotic treatment, regardless of receiving single or multiple antithrombotic agents.
Conclusions: We found no significant increase in upper-GI bleeding risk following an EGD biopsy in patients taking antithrombotic agents, suggesting its safety without the need for antithrombotic treatment interruption.

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Introduction

Antithrombotic agents have important roles for medical treatment and prevention of various diseases. Of those, antiplatelet drugs such as low-dose aspirin and clopidogrel are used for prevention of cerebrovascular disease and coronary arterial disease.[1–4] On the other hand, anticoagulant drugs, including warfarin and direct oral anticoagulants (DOACs) are given for a variety of clinical conditions, such as prevention of recurrent venous thromboembolism and stroke in patients with atrial fibrillation.[5–8] Thus, antithrombotic agents have been commonly used in recent years as both primary and secondary drugs to prevent cerebrovascular and coronary diseases in the expanding elderly population.

Although use of antithrombotic agents contributes to prevention of various vascular diseases, patients treated with those are at greater risk of gastrointestinal (GI) bleeding.[9–15] Therefore, diagnostic and therapeutic endoscopic procedures should be performed under consideration of bleeding risk. Indeed, cessation of antithrombotic drugs before an endoscopic examination is thought to reduce the risk of GI bleeding.[12,13,16–19] However, thrombosis caused by cessation of those drugs is closely associated with more serious complications including increased mortality.

Several retrospective studies have shown that an endoscopic biopsy is not related to increased GI bleeding in patients who continue to use antithrombotic drugs.[20–23] In addition, endoscopic biopsy procedures have been safely performed in patients taking warfarin by appropriately controlling the prothrombin time-international normalized ratio (PT-INR).[24,25] As a result, recent guidelines for gastrointestinal endoscopy do not recommend cessation of antithrombotic drugs before an endoscopic biopsy.[26,27] However, evidence thoroughly showing the safety of an endoscopic biopsy in patients taking antithrombotic agents remains insufficient. To clearly elucidate this issue, we performed the present multicenter prospective observational study to determine bleeding risk in patients undergoing antithrombotic treatment according to guidelines presented by the Japan Gastroenterological Endoscopy Society (JGES).[27]

Materials and Methods

This study was prospectively conducted from January 2013 to August 2014 at 14 centers (2 university hospitals, 12 general hospitals) in Japan. The study protocol was approved by the Shimane University Institutional Committee on Ethics as well as by the ethics committee of each institution (UMIN000013520). Informed consent was obtained from all patients. All endoscopic biopsy procedures performed in patients receiving antithrombotic agents were carried out according to the JGES guidelines.[27]

Patients being treated at the participating hospitals who received antiplatelet (single or multiple) and/or anticoagulant agents, and who underwent a diagnostic esophagogastroduodenoscopy (EGD) biopsy during the study period were enrolled. The EGD examinations and biopsy procedures were performed by well-trained endoscopy specialists at each hospital who carefully observed the upper-GI tract of their patients and sometimes used magnifying endoscopy for diagnosis when necessary to avoid an unnecessary biopsy. All biopsies were carefully performed using forceps for various reasons, including the presence of symptoms (heartburn, dysphagia, epigastralgia, and discomfort), screening or surveillance of cancer, and closer examination of cancer before endoscopic or surgical therapy. The actual number of samples obtained was used as the number of biopsy procedures in each case. PT-INR level was measured in each patient receiving warfarin within 7 days before EGD and a diagnostic biopsy procedure was permitted when that value was <3.0. Patients administered DOACs received those drugs on the day of the EGD examination and biopsy procedure. Emergency EGD cases as well as patients with cessation of antithrombotic drugs before the EGD biopsy were excluded from the study. Patients not receiving antithrombotic therapy and who underwent a diagnostic EGD biopsy procedure were enrolled as control patients. We attempted to match the control group by age (± 5 years) and gender with the patients receiving antithrombotic agents at a 1 to 1 ratio. After confirming hemostasis at the biopsy site, the endoscope was removed. The primary outcome of this study was incidence of upper-GI bleeding following an EGD biopsy. Patients who came to the emergency room or outpatient clinic for symptoms such as tarry stool or hematemesis within 30 days after the EGD biopsy underwent a blood test, and those with upper-GI bleeding were confirmed by the presence of anemia.

Statistical analyses were conducted using a χ^2 test, with a P value < 0.05 considered to be significant. All calculations were performed using SPSS version 19.0 for Windows (IBM-SPSS Inc, Armonk, New York).

Results

A flow chart of the study protocol is presented in **Figure 1**. We initially enrolled 286 patients who were taking antithrombotic agents, of whom 9 were excluded from analysis due to cessation of antithrombotic agents before EGD. In addition, 263 patients not receiving antithrombotic therapy were enrolled as control patients. The number in the control group was less than that of patients taking antithrombotic agents, because appropriate age- and sex-matched patients could not be found at several of the participating institutions during the study period.

Patient characteristics are shown in **Table I**. There were no significant differences in regard to gender or average age between the groups. Details of the antithrombotic drugs used are shown in **Table I**. As for anticoagulant agents, warfarin (n = 45) and DOACs (dabigatran, n = 12 and rivaroxaban, n = 7) were given, whereas low-dose aspirin (100 mg, n = 122 and 81 mg, n = 7), clopidogrel (n = 37), ethyl icosapentate (n = 21), limaprost alfadex (n = 20), and cilostazol n = 17) were frequently given as antiplatelet agents. Twenty-four patients were receiving multiple antiplatelet drugs (clopidogrel and aspirin together, n = 5), and 9 were administered both antiplatelet and anticoagulant agents. The rates of proton pump inhibitor (PPI) and histamine H2-receptor antagonist

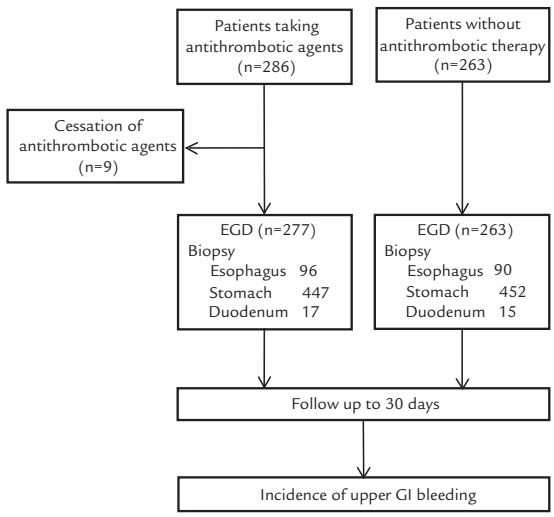

Figure 1. Flow chart of the study protocol.