

# Differences in Clinical Characteristics between Right- and Left-Sided Colonic Diverticular Hemorrhage

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## Abstract

**Background:** The number of patients with diverticular diseases has recently increased in Japan. Hemorrhage is a common manifestation of colonic diverticulosis, and the most frequent cause of lower gastrointestinal bleeding. Right- (RSD) and left- (LSD) sided diverticula are more predominant in Asian and in non-Asian populations, respectively. This retrospective study investigates differences in the clinical courses of hemorrhages arising from RSD and LSD.

**Methods:** The clinical characteristics of 109 consecutive patients with colonic diverticular hemorrhage (from RSD, n=75; from LSD, n=34) selected from those admitted to Teikyo University Hospital (Tokyo, Japan) between January 2004 and August 2012 were compared.

**Results:** Mean age was slightly lower and males were more predominant in the RSD than in the LSD group. All other background data were similar. Four and two patients in the RSD group required surgical resection and hemostasis using angiography, respectively, whereas none of the patients in the LSD group needed such invasive treatment. Endoscopic hemostasis was achieved in 21 (28%) of 75 and in 5 (14.7%) of 34 patients in the RSD and LSD groups, respectively, although the difference was not significant. The recurrence rates were essentially identical (RSD, 17.3%; LSD, 17.6%).

**Conclusion:** Patients with hemorrhage from RSD tended to be more male-dominant than those from LSD. Serious bleeding is more likely to arise in patients with RSD, and endoscopic hemostasis is one choice of treatment when bleeding is suspected.

**Keywords:** Hemostasis; Diverticular hemorrhage; Gastrointestinal bleeding

## Introduction

The incidence of colonic diverticulosis appears to have increased in Japan, most likely due to an aging society and a change in diet from traditional fiber-rich foods to fat-rich foods [1]. Two major complications of colonic diverticulosis are inflammation and bleeding, and diverticular hemorrhage is the most common cause of lower gastrointestinal bleeding [2].

Right-sided colonic diverticulosis (cecum, ascending and transverse colon; RSD) is predominant in Asian countries, including Japan, whereas left-sided diverticulosis (rectum, sigmoid and descending colon; LSD) is far more frequent in Western population [3]. The clinical courses of inflammation between RSD and LSD apparently differ since the latter is likely to worsen and require surgical intervention [4]. However, little is known about whether or not the clinical profile of hemorrhage is different between RSD and LSD. The present retrospective study clarifies whether the clinical profiles of hemorrhage between RSD and LSD differ.

## Materials and Methods

This study comprised a retrospective review of patient charts. Data were analyzed from 109 consecutive patients admitted to Teikyo University Hospital (Tokyo, Japan) between January 2004 and August 2012 with colonic diverticular hemorrhage (from RSD, n=75; from LSD, n=34) diagnosed by endoscopy and computed tomography. In our institute, conservative treatment is initially performed for patients with the lower gastrointestinal hemorrhage. The computed tomography is also done for detecting bleeding site. Colonoscopy is adapted if conservative treatment has failed or the course of the bleed needs to be investigated. Patients with unidentified bleeding sites were excluded. Clinical data, including age, sex, history of diverticular bleeding, comorbid disease, concomitant prescriptions, treatment, and clinical course and bleeding recurrence, were collected from medical charts.

Differences in clinical factors between the groups with RSD and LSD were statistically evaluated using chi-square or unpaired t-tests. A p-value <0.05 was considered statistically significant.

## Results

Mean age was slightly lower in the RSD than in the LSD group (69.2 vs. 72.4 y), although the difference was not significant. The RSD group comprised more male than female patients (Table 1), however, other background characteristics of the two groups were nearly identical. The rate of successful conservative therapy was significantly lower in the RSD than in the LSD group (64.0% vs. 85.2%, p=0.024). Among the RSD group, 4, 2, and 21 required surgery, angiographic intervention, and endoscopic hemostasis, respectively. One patient died of hypovolemic shock due to hemorrhage from RSD. In contrast, none of the patients in the LSD group required surgical or angiographic intervention, and only five underwent endoscopic hemostasis (Table 2). Rates of bleeding recurrence were similar between the RSD and LSD groups (26.5% vs. 27.8%).

## Discussion

The present findings indicated that hemorrhage from the RSD is more serious than that from the LSD. The rate of successful conservative

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Factor	RSD	LSD	p-value
Number of Patients	75	34	-
Age (year)	69.2 ± 13.0	72.4 ± 12.4	ns
Sex (male/female)	60/15 (80%)	19/15 (56%)	0.009
History	14 (18.6%)	5 (14.7%)	ns
Smoking	18 (24.0%)	5 (14.7%)	ns
Alcohol	30 (40.0%)	10 (29.4%)	ns
Comorbidity			
Hypertension	51 (68.0%)	21 (61.8%)	ns
Diabetes	17 (22.7%)	7 (20.6%)	ns
Dyslipidemia	27 (36.0%)	9 (26.5%)	ns
IHD	19 (25.3%)	11 (32.4%)	ns
CVD	19 (25.3%)	9 (26.5%)	ns
Concomitant drugs			
Aspirin	32 (42.7%)	13 (38.2%)	ns
Other NSAID	16 (21.5%)	6 (17.6%)	ns
Anticoagulant	7 (9.3%)	5 (8.8%)	ns
Calcium blocker	32 (42.6%)	13 (38.2%)	ns

Abbreviations: LSD; left-sided diverticulosis, RSD; right-sided diverticulosis, ns; not significant, IHD; ischemic heart disease, CVD; cerebrovascular disease, NSAID; non-steroidal anti-inflammatory drug

**Table 1:** Patient's background characteristics

	RSD	LSD	p-value
Number of patients	75	34	-
Hemoglobin (g/dL)	10.1 ± 2.7	10.5 ± 2.2	ns
Transfusion (%)	40 (53.3%)	16 (47.1%)	ns
Treatment			
Conservative alone	48 (64.0%)	29 (85.2%)	0.024
Endoscopy	21 (28.0%)	5 (14.7%)	ns
Angiography	2 (2.7%)	0	ns
Surgery	4 (5.3%)	0	ns
Recurrence	13 (17.3%)	6 (17.6%)	ns
Death	1 (1.3%)	0	ns
Fasting duration (day)	4.6 ± 3.4	4.6 ± 2.5	ns
Hospitalization (day)	9.6 ± 5.1	13.1 ± 7.4	ns

Abbreviations: LSD; left-sided diverticulosis, RSD; right-sided diverticulosis, ns; not significant

**Table 2:** Hemorrhage data

treatment of the LSD group was comparable to that of a previous report describing a non-Japanese population. Wilkins et al. stated that over 80% of diverticular bleeding could be treated conservatively [5]. In comparison, the success rate of conservative treatment for RSD hemorrhage seems rather low. Notably, hemorrhage from RSD requires more aggressive treatment more frequently than that from LSD.

Although a gold standard for the management of diverticular hemorrhage has yet to emerge, endoscopic treatment can effectively achieve hemostasis against diverticular hemorrhage [6,7]. Endoclips are usually applied to achieve hemostasis and prevent recurrent bleeding, and band ligation has occasionally been applied [8-10]. The present study found that endoscopic hemostasis tended to be successful more frequently for the RSD than for the LSD group, indicating that endoscopic hemostasis should be aggressively attempted when hemorrhage arises from right-sided colonic diverticulosis.

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Ishii et al. reported that right-sided diverticular hemorrhage is a significant predictor of refractory hemorrhage after hemostasis using hemoclips [11]. Clinicians should bear in mind that bleeding from RSD is more difficult to manage than that from LSD. Further studies should attempt to establish more efficient therapeutic measures against bleeding from RSD.

## Conclusion

Patients with hemorrhage from RSD tended to be more male-dominant than those with hemorrhage from LSD. Because serious bleeding frequently arises in patients with RSD, endoscopic hemostasis should be considered as the treatment of choice when such bleeding is suspected.

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