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• COLORECTAL CANCER •

Differences in endoscopic classification of early colorectal carcinoma between China and Japan: A comparative study

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Abstract

AIM: To compare the differences in the endoscopic classification of early colorectal carcinoma (CRC) between Japan and China.

METHODS: Ten cases of early CRC were included in the study. After reviewing the color pictures of these cases, 5 Japanese endoscopists and 5 Chinese endoscopists made their classificatory diagnosis individually using the current Japanese classification, and indicated their findings on which the diagnosis was based.

RESULTS: Some lesions diagnosed by the Japanese endoscopists as IIa or IIa plus IIc, were classified as Is or Isp by the Chinese endoscopists. For superficial lesions consisting of elevation plus central depression, IIa plus depression, IIa plus IIc or IIc plus IIa were classified according to the ratio of elevated area/depressed area. However, international as well as interobserver difference still existed in the classification of such lesions. In addition, most Chinese endoscopists overlooked slightly depressed part on the top of a protruded lesion. Laterally spreading tumor, a special type of IIa, was identified as LST by some Japanese endoscopists.

CONCLUSION: Discrepancies on macroscopic classification for early CRC do exist between Japanese and Chinese endoscopists, which are found not only in terminology but also in recognition of some lesions. In order to develop a universal classification, it needs for international communication and cooperation.

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INTRODUCTION

ColorectaI carcinoma (CRC) is the most common cancer of digestive system in the Western countries[1,2]. Recently, however, with the westernization of life style and dietary habits, its morbidity and mortality have also increased considerably in both China and Japan[3,4]. A series of clinical studies in many countries have all shown that both CRC incidence and mortality can be significantly reduced by a systematic screening program including endoscopic examination of the large bowel[5-8]. As a result, endoscopic diagnosis and treatment for early lesions have become more and more important in the management of CRC all over the world[9]. Undoubtedly, a worldwide agreed endoscopic classification for early CRCs will be very useful in clinical practice as well as in research[10,11].

Early CRC, according to the Japanese definition, refers to colorectal carcinoma that has not invaded beyond the submucosal layer[12]. Japanese endoscopists have developed their endoscopic classification for early CRCs since the early 1970s, and kept on modifying it. This definition of early CRC, however, has not been formally accepted in the Western countries, where Duke' s classification has been widely used for decades[13,14]. So far there has been no such classification for early CRCs in America and Europe[15]. On the contrary, Chinese doctors hold the same opinion as Japanese on the definition of early CRC, and have established a classification slightly different from the Japanese one. Up to now there has been no comparative study on endoscopic classification of early CRCs between Japan and China. lt is unclear whether Japanese classification can be easily understood and used outside of Japan[16]. This study was conducted in an attempt to clarify these questions and, particularly to evaluate the validity and feasibility of the current Japanese classification.

MATERIALS AND METHODS

Ten typical cases of early CRC were selected in this study from the Second Department of Internal Medicine in Osaka Medical College, Japan. All the diagnoses were proved pathologically, according to the results of nine adenocarcinomas and one adenoma. Five Japanese and five Chinese expert endoscopists were asked to review the colonoscopic pictures of these cases, including those before and after indigocarmine spraying. After viewing the pictures, all the endoscopists individually made their classificatory diagnosis of these cases and indicated the findings on which they based for each classificatory diagnosis. In addition, Chinese doctors were also asked for a comment on the current Japanese classification.

Doctors included in this study all majored in gastroenterological endoscopy. Hereafter their names were alphabetically listed as follows: Ichiro Hirata, Masahiro Itoh, Hiroshi Kashida, Hideki Mitooka, Seiji Shinmizu, Shu-dong Xiao, Zhao-min Xu, Zhong- lin Yu, Zhi-hong Zhang and Ren-min Zhu. The current Japanese classification, established by Japanese Research Society for Cancer of Colon, Rectum and Anus, was used as the referring classification in this study[17].

RESULTS

The results of classification are shown in Table 1. From Table

1, the following differences were indicated in macroscopic classification between Japanese and Chinese doctors.

Table 1 Differences in classification of 10 early CRCs between Japanese and Chinese endoscopists

Case	Classificatory diagnosis	
	Japanese (5)	Chinese (5)
1	IIa+IIc(5)	Is(4), IIa+IIc(1)
2	IIa+IIc(4), Isp+llc(1)	Isp(3), Isp+IIc(1), IIa(1)
3	IIc+IIa(3), IIc(2)	IIc+IIa(4), IIc(1)
4	IIc+IIa(3),IIa+IIc(1),IIa+dep.(1)	IIa+IIc(3), IIc+IIa(2)
5	IIa+dep.(3), IIa(2)	IIa+IIc(3), IIa(2)
6	Ip+IIc(4), IIa+IIc(1)	Ip(3), Ip+IIc(1), IIa+IIc(1)
7	LST(3),IIa agg. (2)	IIa
8	IIa(3), LST(2)	IIb(3), IIa(2)
9	LST(3), IIa(1), IIc(1)	IIc(3), IIb(1), IIa+IIc(1)
10	LST(3), IIa(1), IIc+IIa(1)	IIc+IIa(4), IIa(1)

[a]The numbers in parentheses are numbers of endoscopists; [b]IIa agg. IIa aggregating type.

Distinctly elevated lesions between type I and type II

Case 1 was a distinctly elevated lesion with a diameter of 15 mm and a height of 3.6 mm. The central depression became clear after indigocarmine spraying. This one was classified as IIa plus lIc by all the five Japanese and one Chinese endoscopists, while it was regarded as Is by other four Chinese endoscopists. Case 2 was a protruded lesion with a central depression. The diameter and height were 10 mm and 5.5 mm respectively (Figure 1). It was diagnosed as type IIa plus lIc by all but one Japanese endoscopist, while classified as lsp by three of five Chinese endoscopists. One Japanese and one Chinese endoscopist diagnosed it as Isp plus IIc, while one Chinese endoscopist classified it as IIa.

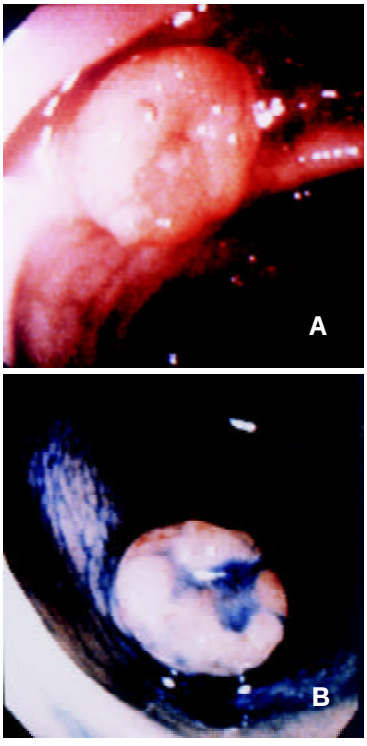

Figure 1 Submucusal adenocarcinoma with a diameter of 10 mm and a height of 5.5 mm. A: before indigocarmine staining, B: after indigocarmine staining.

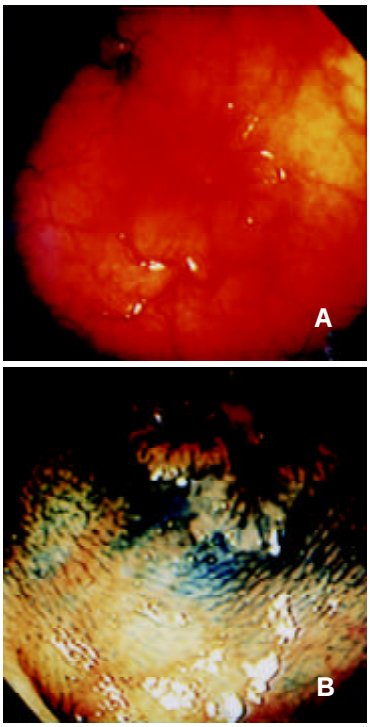

Figure 2 Mucosal adenocarcinoma with a diameter of 13 mm and a height of 1.5 mm. A: before indigocarmine staining, B: after indigocarmine staining.

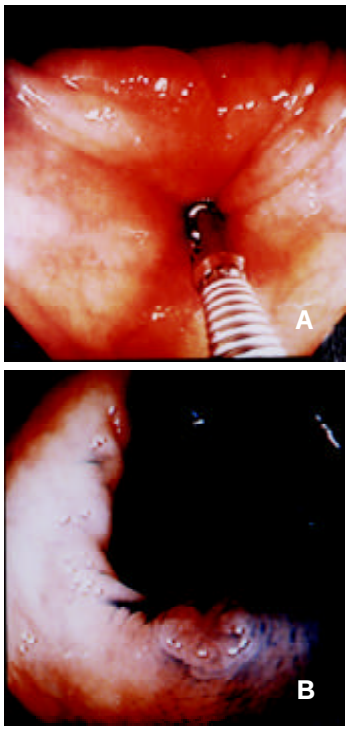

Figure 3 Adenoma with a diameter of 5 mm. A: before indigocarmine staining, B: after indigocarmine staining.

Superficial lesions consisting of elevation with depression

Case 3 was a typical superficially depressed lesion, with a slight circumferential elevation (1.5 mm), which was ambiguous before indigocarmine spraying (Figure 2). Three Japanese and four Chinese endoscopists diagnosed it as IIc plus IIa, while the rest three endoscopists classified it as IIc. Case 4 was a superficial lesion consisting of elevation plus central depression, and it was difficult to judge which part was larger even after indigocarmine spraying. Three Japanese and two

Chinese endoscopists classified it as IIc plus lIa, three Chinese and one Japanese endoscopists classified it as IIa plus IIc, and one Japanese endoscopist diagnosed it as IIa plus depression.

Superficial lesions consisting of elevation with linear depression

Case 5 was a small adenoma consisting of elevation with linear depression (Figure 3). Three Japanese endoscopists diagnosed it as IIa plus depression, while three Chinese endoscopists classified it as IIa plus IIc. The other two Japanese and two Chinese endoscopists diagnosed it as IIa.

Type I lesions with depression on the top

Case 6 was a protruded lesion with a peduncle and a depression on the center of the top (Figure 4). All but one Japanese endoscopist diagnosed it as Ip plus IIc, while three Chinese classified it as Ip. One Chinese endoscopist agreed with most Japanese, while one Japanese and one Chinese endoscopist classified it as IIa plus IIc.

Laterally spreading tumors

Case 7 was an extensively superficial elevated lesion with a diameter of 26 mm. Three Japanese doctors diagnosed it as LST granular type, and the other 2 Japanese doctors classified it as IIa aggregating type. However, five Chinese doctors all regarded it as IIa (Figure 5).

Case 8 was also a superficially elevated lesion with a diameter of 15 mm. The surface was rather smooth as compared to Case 7. Two Japanese endoscopists regarded it as LST non-granular type, three Chinese endoscopists diagnosed it as II b, while the rest five doctors classified it as IIa.

Case 9 was an extensive superficially elevated lesion with some depression, its diameter was 20 mm. Three Japanese doctors diagnosed it as LST plus "pseudo-depression", while three Chinese and one Japanese doctor regarded it as IIc. The rest doctors classified it as IIb, IIa, or IIa plus IIc, respectively.

Case 10 was also a superficial lesion extending horizontally with some depression, which was regarded as "pseudo-depression" in LST by three Japanese doctors. One Japanese and 4 Chinese doctors classified it as II c plus IIa (Figure 6).

Figure 4 Submucosal adenocarcinoma with a diameter of 8 mm. A: before indigocarmine staining, B: after indigocarmine staining.

Figure 5 Mucosal adenocarcinma with a diameter of 26 mm. A: before indigocarmine staining, B: after indigocarmine staining.

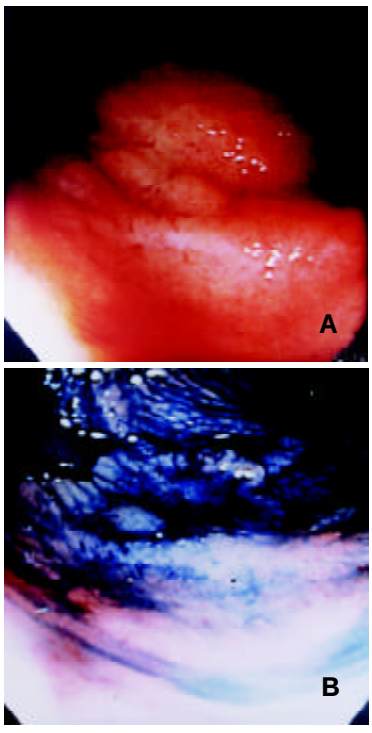

Figure 6 Submucosal adenocarcinoma with a diameter of 28 mm. A: before indigocarmine staining, B: after indigocarmine staining.

DISCUSSION

The endoscopic classification of early CRC in China was established on the basis of the Japanese classification for early gastric cancer, and has remained unchanged so far[18]. The Japanese classification, however, was developed 30 years ago and has been modified continually since then. Even so, the discrepancies are still common among Japanese colonoscopists, especially on the classification of type II lesions consisting of

elevation plus depression[19]. This was illustrated best in a recent panel discussion in Japan[20,21]. Most doctors in China regard the current Japanese classification as a comprehensive one, although some new concepts seem to be complicated and confusable. One of the differences between two classifications is that IIb, IIc and IIc plus IIa are not included in the Chinese one, for lack of such experiences in China[22]. Moreover, Chinese endoscopists are not familiar with the concept of IIa plus depression and LST. Actually, reports on superficial early CRC are few in China, which deal with depressed type. Most early CRC cases reported by Chinese endoscopists were the so-called local canceration of polyps and/or adenomas, which were diagnosed mainly after endoscopic polypectomy[23]. All these facts may explain why there are some differences in endoscopic classification of early CRC between doctors from two countries.

Some elevated lesions classified as type II in Japan might be diagnosed as Is or Isp by Chinese endoscopists. Case 1 and Case 2 were two examples. It should be emphasized that the definitions of type I and type II are exactly the same in Japan and in China. Therefore, the difference here was not in terminology but in interpretation of the same findings. In other words, the judging criteria for the height of a lesion were not the same in two countries. It is suggested that IIa should be the lesion with its height/diameter less than 1/2, therefore those with their height/diameter lager than 1/2 should be included in type I[24]. Now that the ratio for case 2 is 5.5/10, just a little bit larger than 1/2. It might be difficult to measure the accurate height of a lesion during endoscopic examination because of air-induced deformation[25]. This might be one of the reasons why international and interobserver differences occurred in the classification of such lesions.

For lesions that consist of superficial elevation plus superficial depression, many (if not all) Japanese endoscopists may classify them as IIa plus llc or IIc plus IIa, according to the ratio of elevation/depression, i.e. the large one is regarded as the main part and described first[26,27]. This is also the case in China[18]. Although international difference is not significant, interobserver differences still exist in classifying these lesions, which were indicated in case 3 and case 4.

In Japan, IIa plus depression has been used to refer to a small superficially elevated lesion with pseudo-depression or linear depression, which is always found to be adenoma pathologically[28]. This kind of lesion may appear to be IIa plus IIc or IIc plus IIa after dye spraying, although it has no well-demarcated depression. However, the current Chinese classification is not comprehensive, and does not include IIa plus depression. Furthermore, many new techniques such as chromoendoscopy or magnifying endoscopy has not been widely used in China[29,30]. Although the current Japanese classification was presented to the Chinese endoscopists, the definition of IIa plus depression might be too difficult to be understood completely in such a short time. There is no wonder that some Chinese endoscopists either overestimated the linear depression or simply neglected it, thus case 5 was diagnosed of either as IIa plus IIc or as IIa.

Similarly, to a protruded lesion with depression on the top, many Chinese endoscopists either not knew or simply neglected the depressed parts, thus diagnosed it as Is, Isp or Ip, while it should be classified as Is plus IIc, Isp plus IIc and Ip plus IIc, respectively according to most Japanese colonoscopists[31]. This tendency was indicated in case 1, case 2 and case 6.

LST, according to the definition recommended by Kudo, refers to a superficially elevated lesion that mainly grows horizontally rather than vertically, and its largest diameter is no less than 10 mm[32]. It is also suggested that LST should be classified into two subtypes, granular and non-granular, and the former may be further divided into homogeneous and mixed nodular. Our results indicated that international as well as inter-observer discrepancies were significant in the classification of such lesions. For case 7, the so-called mixed nodular LST or IIa aggregating type in Japan, Chinese endoscopists usually diagnosed it as IIa, though they also pointed out that it was a clustered nodular lesion[33]. The difference here might be just a difference in terminology.

Interestingly, three out of five Chinese endoscopists classified case 8 as IIb, which was regarded as LST non-granular type by most Japanese doctors. IIb has been defined as a lesion that is on the same level with the surrounding normal mucus in both Japanese and Chinese definition[34,35]. That is to say, Chinese endoscopists might have overlooked or simply neglected the slight elevation in case 8.

Case 9 and case 10 were rather complicated lesions, which were classified differently because the interpretations were different to the depressed parts of these lesions[36]. For those who classified them as LST, "pseudo-depression" was used to refer the depressed parts, and for those who classified them as IIc or IIc plus IIa, "authentic" rather than "pseudo" depression was interpretated, while for those who classified them as IIa, the so-called "pseudo-depression" was simply neglected.

In conclusion, differences in the endoscopic classification of early CRC do exist between Japan and China. In order to develop a universal endoscopic classification for early CRC, it needs for international communication and cooperation.

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