ORIGINAL RESEARCH

International Journal of Surgery 12 (2014) 408–411

Contents lists available at ScienceDirect

International Journal of Surgery

journal homepage: www.journal-surgery.net

Original research

# Diagnosis and treatment experience of rectal carcinoid (a report of 312 cases)

Hong Yangong [a,1], Chengyao Shi [b,1], Muhammad Shahbaz [a], Niu Zhengchuan [a], Jiayong Wang [a], Benjia Liang [a], Fang Ruliang [a], Huijie Gao [a], Qiu Bo [a], Jun Niu [a,*]

[a] Department of Hepatobiliary Surgery, Qilu Hospital, Shandong University, Jinan 250012, China
[b] Department of Clinical Pharmacology, Qilu Hospital, Shandong University, Jinan 250012, China

ARTICLE INFO

*Article history:*
Received 21 January 2014
Received in revised form
23 February 2014
Accepted 10 March 2014
Available online 12 March 2014

*Keywords:*
Rectal carcinoid
Transanal local resection
Radical surgery
Recurrence
Metastasis

ABSTRACT

*Objective:* To explore the diagnosis of rectal carcinoid tumors and to adopt the best method of treatment.
*Patients and methods:* A group of 312 cases of pathologically confirmed rectal carcinoid were analyzed retrospectively. Data were obtained retrospectively from a database of all colorectal malignancies at Qilu Hospital from January 2004 to December 2012. 4072 colorectal malignant tumors and 312 rectal carcinoid tumors were diagnosed. Endoscopic resection was performed on 44 patients, while the other 248 underwent anus partial extended radical polypectomy. We evaluated the clinical manifestations, diagnosis, treatment and follow-ups regarding carcinoids and the relation between tumor diameter and the rate of recurrence or metastasis after surgery.
*Results:* There is no recurrence or metastasis after the transanal local resection in 284 cases with the tumor diameter less than 2 cm, 6 months to 7 years' follow-up. While, in 12 cases with the tumor diameter more than 2 cm radical surgery was performed, 8 cases had liver metastases at the time of the diagnosis of rectal carcinoid, 4 cases had no recurrence or metastasis after two and a half years' of follow ups, there is no recurrence or metastasis in 4 cases of multiple rectal carcinoids, whom all underwent radical surgery, follow ups continued for 2 years.
*Conclusion:* Early diagnosis and treatment is important for rectal carcinoids, local resection is a simple, safe and effective treatment for carcinoids with a tumor diameter less than 2 cm.


**What is already known on this topic?**

Rectal carcinoid tumors originate from APUD.

**What this study adds?**

Early diagnosis and treatment is important for rectal carcinoids.

## 1. Introduction

Rectal carcinoid tumors originate from APUD (amine precursor uptake and decarboxylation) cells in the rectal mucosa. Although rectal carcinoid tumors are rare, they have their own unique clinical manifestations. Rectal carcinoid tumors are usually found incidentally during endoscopic examination. The typical endoscopic examination of rectal carcinoid tumors reveals smooth, round, sessile elevations covered with normal-appearing or yellow-discolored mucosa. This article analyses 312 cases of pathologically confirmed rectal carcinoids taken from clinical data obtained from Qilu Hospital and other hospitals in Jinan, Shandong Province, during January 2004 to December 2012 retrospectively and discusses the clinical manifestations, diagnosis, treatment and follow-ups regarding carcinoids.

## 2. clinical data

### 2.1. General information

A group of 312 cases, including 180 males and 132 females, aged 23–74 years old, with a median age of 48.02 years during January

* Corresponding author.
*E-mail address:* sdusurg@gmail.com (J. Niu).
[1] These authors contributed equally.

http://dx.doi.org/10.1016/j.ijsu.2014.03.002
1743-9191/

**Table 1**
Clinical manifestations of Rectal Carcinoid patients.

| | None | Bowel habits change | | Lower abdominal pain | Intermittent bleeding stool | Anal discomfort | Tenesmus |
|---|---|---|---|---|---|---|---|
| | | Diarrhea | Constipation | | | | |
| Number | 124 | 88 | 44 | 76 | 48 | 36 | 24 |
| Rate (%) | 39.74 | 28.21 | 14.10 | 24.36 | 15.38 | 11.54 | 7.69 |

2004 to December 2012 from the Department of Hepatobiliary Surgery in Qilu Hospital were included in this study.

All lesions were diagnosed histopathologically as rectal carcinoids by the Department of Pathology in Qilu hospital. These accounted for 7.66 percent of colorectal cancers treated in the same period (312/4072) (Table 1).

### 2.2. Clinical manifestations

#### 2.2.1. Clinical findings

#### 2.2.2. Rectal touch examination

In 276 of 312 cases (88.46%) rectal carcinoids were located less than 8 cm from the anus. Tumors, which are single, smooth, hard, clear edged, and without blood, were touchable in submucosa with a digital rectal examination. The others (11.54%) more than 10 cm from the anus were not palpable with a digital rectal examination. In this group, the tumor size is from 2 mm to 40 mm, occupying 50 percent of the intestinal wall. In 196 cases the size of tumors is less than 1 cm and 1–2 cm in 96 cases, and larger than 2 cm in 20 cases.

### 2.3. Endoscopic findings

268 cases of rectal carcinoid tumors presented with a single circular sub mucosal mass protruding into the intestinal lumen, having wide base, flat or steep edges or a bulge, yellow or pale in color. Tumors with less than 2 cm diameter were covered by normal mucosa on the surface, and their texture was hard. Ulcers were visible on the surface of tumors with diameter larger than 2 cm. 44 cases of rectal carcinoid presented with obvious lumps.

## 3. Results

44 cases of rectal carcinoid tumors ($D \leq 0.5$ cm) with endoscopic resection had no recurrence or metastasis, subsequent 6 months – 5 years' postoperative follow-up. There is also no recurrence or metastasis in 248 cases ($D = 0.5$ cm $\sim$ 2 cm) treated with anus partial extended radical polypectomy, followed up for 1–5 years. Among 20 cases ($D > 2$ cm), 8 cases had intrahepatic metastasis before the disease was diagnosed, 4 patients without bleeding or obstructive symptoms did not undergo surgery, and 4 cases, treated with colorectal cancer radical resection because of obstructive symptoms, died of liver extensive metastasis in the following 2 years. Another 12 cases, having undergone colorectal cancer radical resection, showed no recurrence or metastasis during a 4 to 6 and a half year postoperative follow-up (Table 2).

We found $P < 0.05$, according to the outcome of Fisher's exact probabilities. So we can conclude that the relation between tumor diameter and the rate of recurrence or metastasis after surgery is statistically significant. When the diameter is bigger than 2.0 cm, the rate will be higher.

## 4. Discussion

The term *carcinoid* is derived from the German word "*karzinoide*," first used by Oberndorfer in 1907 to describe tumors that are more indolent than typical adenocarcinomas. Carcinoid tumors in a wide range of organs have subsequently been identified, most commonly involving the lungs, bronchi, and gastrointestinal tracts. Carcinoid grows slowly but has the possibility of local invasive growth and late metastasis, it is able to transfer by lymphatics and blood. In 1914 Gossett revealed the tumor cell nuclei have argyrophil staining character, and pointed out that the Kulchizky carcinoid are from intestinal epithelial cells. Carcinoids located in the hindgut of rectum are mostly non-argyrophilic, do not produce biologically active amines, and don't have carcinoid syndrome manifestations [1,2] .The incidence of carcinoid tumors inside the small intestine is by far the highest, accounting for 30.8%, followed by the rectum, colon, pancreas, stomach and appendix, which accounts for 26.3%, 17.6%, 12.1%, 8.9% and 5.7% [3–5]. The incidence of carcinoid tumors has increased yearly, by now, all the malignant tumors of the gastrointestinal tract and carcinoid tumors have become second to the common colon cancer tumors [5,6].

### 4.1. Diagnosis

Rectal carcinoids have no obvious clinical specificity, and more than 1/3 patients have no symptoms. Other patients have varying degrees of change in bowel habits, for example, abdominal discomfort, intermittent bloody stool, anal discomfort.

It may be associated with concomitant intestinal polyps, colitis, hemorrhoids and so on, as the manifestations are not unique. But rectal carcinoid has its particular clinical pathology. For instance, the tumor is generally located on the front or side wall of the rectum and 3–8 cm from the anal margin [7]. Therefore, careful and meticulous rectal examination is helpful to find over 90% of cases of rectal carcinoid tumors. If we find round, smooth the sub mucosal induration on the rectal wall, we should consider about this disease. Because the tumor is located under the mucosa with clear boundary and smooth surface, the general pathological examination of the surface tissue is chronic inflammation [7], its positive biopsy rate depends on the technology. It can be generally confirmed by cutting tissue from deep nodule center or frequency electrosurgical excision. Benign and malignant rectal carcinoid is judged by 4 factors, such as tumor size myometrial invasion, single or multiple, and with or without clinical symptoms. For the tumor ($D <$ lcm), Malignant transformation rate is 4%, the transfer rate is 3%, and it has very few myometrial invasion; for tumor ($D = 1$–2 cm), malignant transformation rate is 10%, the transfer rate is 11%,

**Table 2**
Relation between tumor diameter and the rate of recurrence or metastasis after surgery.

| $D$ (cm) | Number of patients with recurrence or metastasis after surgery | Number of patients without recurrence or metastasis after surgery | Total | Rate of recurrence or metastasis after surgery (%) |
|---|---|---|---|---|
| $D < 0.5$ | 0 | 44 | 44 | 0 |
| $0.5 < D < 2.0$ | 0 | 248 | 248 | 0 |
| $D > 2.0$ | 4 | 12 | 16 | 25 |
| Total | 4 | 304 | 308 | 1.3 |

$P = 0.000$ (Fisher's exact).