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## Clinicopathological Study of Anal Canal Cancer

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**ABSTRACT:** On the basis of a result of clinical experience with the treatment for patients with anal canal cancer, a clinicopathological study of anal canal cancer was performed in comparison with that of colon cancer.

Anal canal cancer has a complex histologic types and a tendency toward deep invasion outside the adventitia when compared with colon cancer. Therefore, nodal involvement was in proportion to the depth of cancer infiltration. As a result, the survival time had become worst in patients with Dukes C of anal canal cancer.

The anal canal has been defined that as a canal from the level of the attachment of puborectal muscle to the anal verge. It is mainly covered with smooth striated squamous epithelia except for the upper portion which is covered with specialized columnar epithelia, lasting to the rectal epithelium. The structure of the anal canal is complex with the composition of ecto-and endodermal tissues.

Anal canal cancer is particular in gross appearance, histologic types and the modes of cancer extension in comparison with rectal cancer. This study defined the clinicopathological specificity of anal canal cancer on the basis of our clinical experience.

### PATIENTS

During the past 10 years from January 1979 to December 1988, 533 patients with colon cancer were operated upon at the First Department of Surgery, Nagasaki University School of Medicine. Anal canal cancer was included in 23 patients which accounted for 4.2%. Sex distribution in colon cancer was almost equivalent to a ratio of 55.3 to 44.4. In contrast, anal canal cancers were predominant in females than males in a ratio of 65.2 to 34.6. When compared with surgical radicality, between anal and colorectal cancers it was demonstrated as being 77.3% to 82.6% of curative operability.

According to gross findings as shown in Figure 1, Type 3 lesion was increased in anal canal cancer as compared with that in colon

cancer. On the contrary, Type 1 in colon cancer was increasing rather than that in anal canal cancer.

Histologic types in anal canal cancer varied with varying variety including undifferentiated, mucinous and squamous cell carcinomas as compared with those in colon cancer. In addition, well-differentiated carcinoma was less frequently seen in anal canal cancer.

As for node metastasis, nodal involvement was more common in undifferentiated and mucinous carcinomas of colon cancer than anal canal cancer. On the other hand, nodal involvement in anal canal cancer was not particular in the histologic types. Both cancers were almost similar in comparison with n-factor as shown in Figure 2. With respect to the depth of cancer, anal canal cancer tended to infiltrate more deeply than colon cancer in reflection of

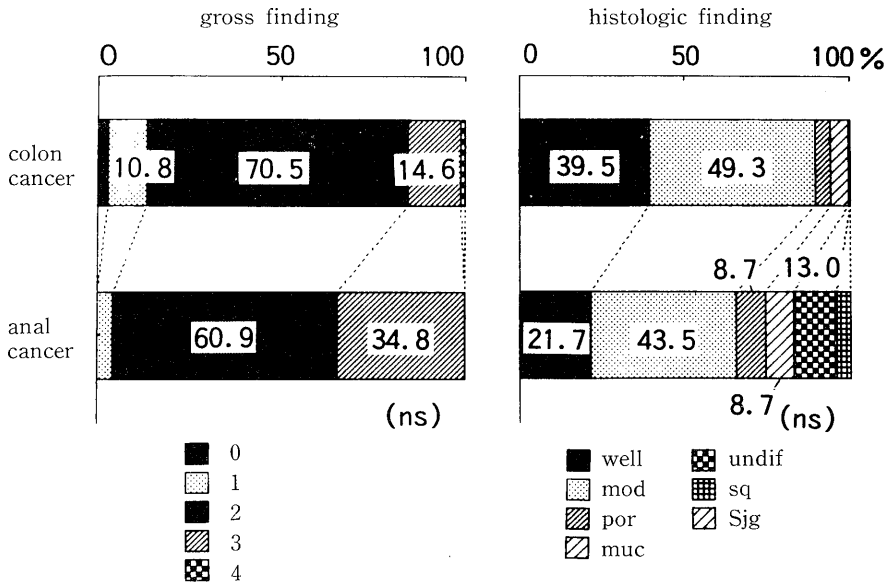


Fig. 1. Distribution of patients according to gross findings and histologic findings.

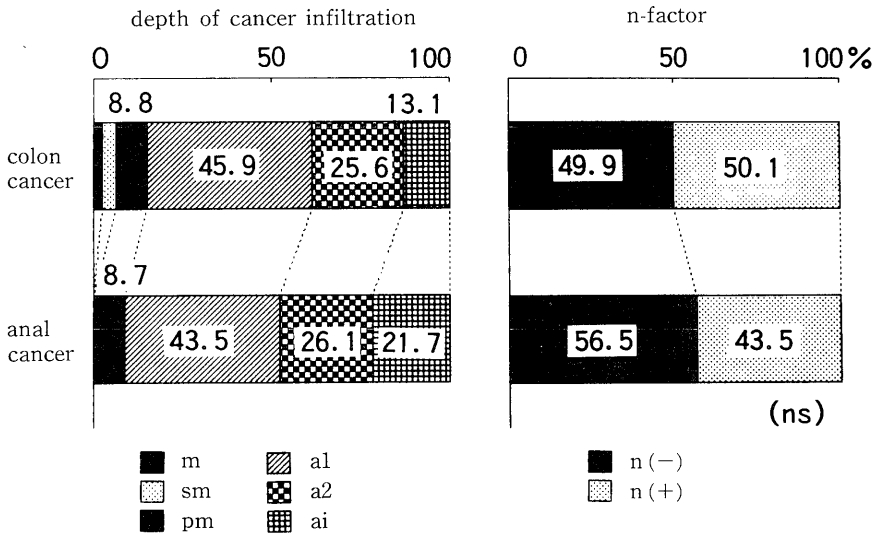


Fig. 2. Distribution of patients according to depth of cancer infiltration and n-factors.

deeper invasion outside the adeventitia in an increasing number.

Figure 3 showed the comparison in v and ly factor between anal canal cancer and colon cancers. The high rate in vascular invasion was characteristic of anal canal cancer. On the contrast, the high frequency of lymphatic invasion was present in colon cancer as shown in

Figure 3.

The survival time was compared according to disease stages by Duke's classification. Figure 4 showed that the survival time in anal canal cancer was generally shorter than that in colon cancer even in the same disease stage. In particular, the survival rate was poor in the group of Dukes C in anal canal cancer with

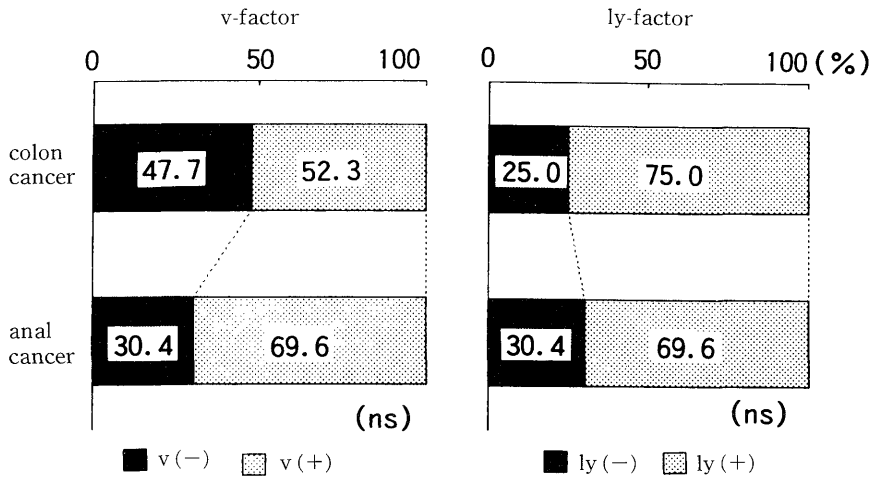


Fig. 3. Distribution of patients according to V-and by factors.

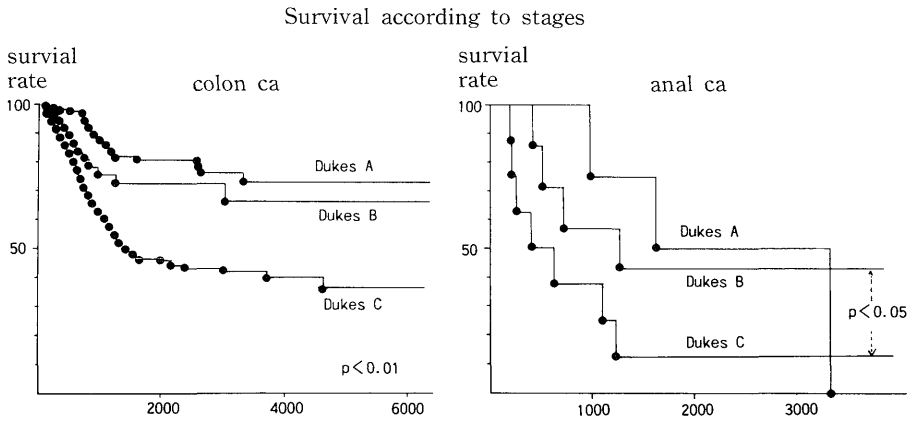


Fig. 4. Survival times according to stages.

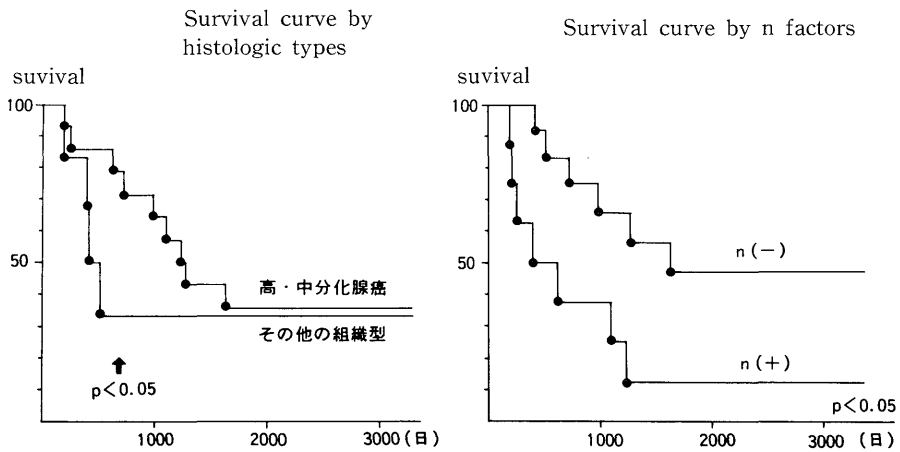


Fig. 5. Survival curves according to histologic types and n-factors.

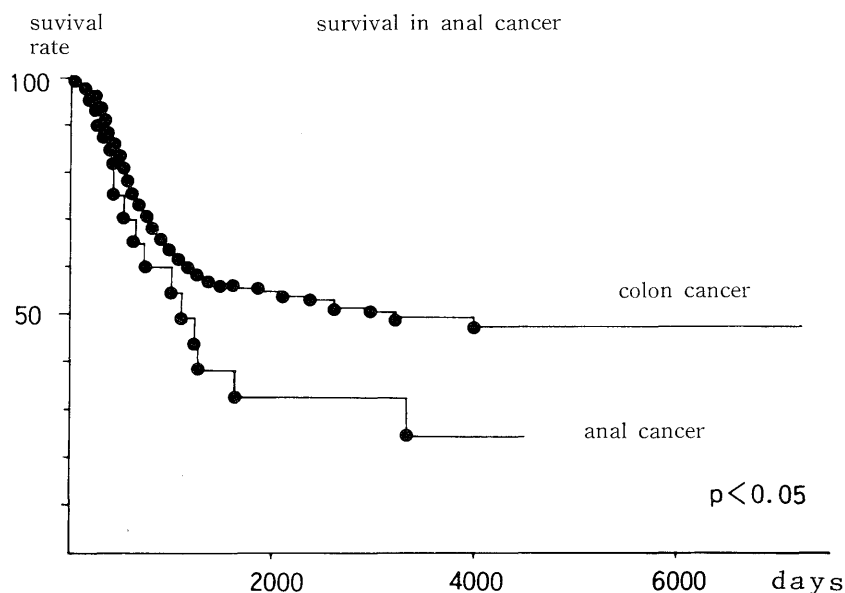


Fig. 6. Survival curves as compared with colon cancers.

statistically significant difference.

Figure 5 showed the survival curve in accordance with histologic types and n factors. The survival time in patients with positive nodal involvement was much different from those with negative ( $p < 0.05$ ), regardless of histologic types.

The survival curve in anal canal cancer was inferior to that in colon cancer as shown in Figure 6.

## DISCUSSION

It is not so easy for anal canal cancer to be detected early in spite of recent advances in diagnostic techniques and tools. It used to be very few in number for anal canal cancer to be detected and treated early because it tends to be cared as anal hemorrhoid at onset<sup>1)</sup>.

There are many reports regarding anal canal cancer in which histologic types should be limited to squamous cell carcinoma and basal cell carcinoma excluding adenocarcinoma.

According to the rule of Japanese Colon Cancer Study Association, it is defined that anal canal cancer originates the sites beneath the attachment of puborectal muscles to the anal verge irrespective of histologic types<sup>6)</sup>

It is clarified by Takano<sup>7)</sup> that the length from

the attachment of puborectal muscles to the anal verge is approximately 3cm and the length from the dented line to the anal verge is 1.8cm long. It is characteristic that the anal canal is anatomically very short in distance with the complexity of carcinomas in origin, which includes variety of histologic types.

Many researchers reported that adenocarcinoma accounted for 37.5 to 57.5%, mucinous carcinoma 17 to 30% and squamous cell carcinoma 9.5 to 20% respectively<sup>8, 9)</sup>. However, histologic types is in close association with origin sites. In general, adenocarcinoma originates in the upper portion of the anal canal, which includes well-differentiated carcinoma reflecting the origination from the columnal epithelium.

It is controversial how to discriminate adenocarcinoma, which is producing mucine from mucinous carcinoma. On the other hand, squamous cell carcinoma also includes two types, that is, well-differentiated carcinoma with keratosis and moderately differentiated carcinoma without keratosis. And also it originates not only from the lower portion of the anal canal, which comprises of the squamous epithelium but also from the upper portion of the anal canal.

Meanwhile, many theories concerning generation of mucinous carcinoma is still debatable.

The origin of mucinous carcinoma has been focused on the anal gland by Kay<sup>10)</sup>, duplication by Dukes<sup>11)</sup> and transitional epithelium by Morson<sup>12)</sup>. Fenger<sup>13)</sup> reported that it was possible to differentiate as to whether the origins of anal canal cancer had been the anal gland or rectal mucosa by using mucin-staining method for adenocarcinoma accompanying anal fistula. On the other hand, Fujiwara<sup>14)</sup> reported that it was impossible to discriminate between mucinous carcinomas originated from the anal gland and the rectal mucosa by Culling' staining.

Many researchers reported the deeper the depth of cancer infiltration, the more nodal involvement extends<sup>8, 9)</sup>. It is accepted that nodal involvement in the inguinal region increases extremely in carcinomas arising from the lower portion of the anal canal<sup>15)</sup>. In contrast, nodal involvement in mucinous carcinoma is not so frequent in occurrence as to be expected.

The survival times in patients with anal canal carcinomas are shorter than those in colon cancers. In particular, the prognoses in patients with Dukes C of anal canal cancers were not favorable.

It is emphasized that surgeons should bear in mind the histologic types and locations in anal canal cancer in consideration of the surgical outcome.

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