

RESEARCH COMMUNICATION

Characteristics of Colorectal Mucinous Adenocarcinoma in Iran

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Abstract

Aims and Background: Mucinous adenocarcinoma (MA) colorectal cancer accounts for 10 to 15% of colorectal carcinoma. It is generally thought that patients with MA present at a more advanced stage of disease and have a poorer prognosis than those with other types of carcinoma. The purpose of the present study was to clarify the clinicopathological characteristics of mucinous colorectal carcinoma in the Iranian population. **Methods:** Between January 2002 and March 2008, Of the 1283 colorectal cancer patients, 110 patients were considered to have mucinous tumors according to pathology report. Patients evaluated on the basis of sex, age, location of tumor, stage, differentiation of tumor and family history of cancer. Kaplan-Meier curves and log-rank tests were used for survival analysis. **Results:** The median age of these patients at diagnosis was 50.07 years. More than 50% of patients were younger than aged 50 years. 34.5% of patients had a family history of colorectal cancer in their first-degree relatives. Most tumors were presented in right colon. 54.3% of MA patients had advanced Stage lesions. The Kaplan-Meier method indicated that, the 1, 3 and 5 years survival rates are 92.6, 80.1 and 41.3 percent, respectively. Survival of the patients was related to disease stage ($P = 0.023$). **Conclusion:** Our suggests that genetic factors may play an important role in the development of this disease in our country and screening programs, especially genetic screening programs, should be considered as a main measure for prevention and control of colorectal cancer in Iran.

Keywords: Mucinous adenocarcinoma colorectal cancer - right colon - stage - family history

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Introduction

Colorectal cancer is considered the third most common cancer worldwide, with about 600,000 new cases each year (Papadopoulos et al., 2004). Mucinous adenocarcinoma (MA) is a histologic subtype of colorectal carcinoma that is defined as an adenocarcinoma in which >50 of the lesion is comprised of mucin (Japanese Society for Carcinoma of the Colon and Rectum, 1997; Hamilton et al 2000). It accounts for 10 to 15% of colorectal carcinoma (Park et al., 2006) and it is predominantly located on the right side of colon and rectum than other parts of the colon, occurs in younger patients compared to the usual colorectal adenocarcinoma (Arai et al., 2007).

It is generally thought that patients with MA present at a more advanced stage of disease and have a poorer prognosis than those with other types of carcinoma (Yamamoto et al., 1993; Wu et al., 1996). Studies proposed that differences in survival of colorectal Mucinous adenocarcinoma could be related to differences in tumor location or stage at presentation rather than to histological type (Yamamoto et al., 1993). However, mucinous carcinomas are heterogeneous with respect to their

clinicopathological and molecular features (Perez et al., 2008). The purpose of the present study was to clarify the Clinicopathological characteristics of mucinous colorectal carcinoma in the Iranian population.

Materials and Methods

Between January 2002 and March 2008, 1283 patients with diagnosis of colorectal adenocarcinoma registered in cancer registry center of Research Center for Gastroenterology and Liver Disease (RCGLD), Shahid Beheshti University (MC); Tehran, Iran. This center is a referral center for GI cancer and patients referred to this cancer registry from public and private hospitals. Of the 1283 patients, 110 patients were considered to have mucinous tumors according to pathology report.

In this study, mucinous adenocarcinoma defined as carcinoma with >50 percent of tumor composing of extracellular mucin. Patients evaluated on the basis of sex, age, location of tumor, stage, differentiation of tumor and family history of cancer. Tumors were classified and staged according to the sixth edition of the TNM Classification of the American Joint Committee on Cancer

Table 1. Distribution of Clinicopathological Features and their Effects on Survival in Colorectal Mucinous Adenocarcinoma Cases

| Variable | Subgroup | Patients (n) | % | p-value |
|----------------------------------|-----------------|--------------|------|---------|
| Age at diagnosis(yrs) (n=110) | ≤50 | 58 | 52.7 | 0.705 |
| | >50 | 52 | 47.3 | |
| Sex (n=110) | Male | 69 | 62.7 | 0.079 |
| | Female | 41 | 37.3 | |
| Family history of cancer (n=110) | Yes | 38 | 34.5 | 0.835 |
| | No | 72 | 65.5 | |
| Grade of tumor (n=84) | Well diff | 38 | 45.2 | 0.965 |
| | Moderately diff | 32 | 38.1 | |
| | Poorly diff | 14 | 16.7 | |
| Stage (n=94) | Early | 43 | 45.7 | 0.023 |
| | Advanced | 51 | 54.3 | |
| Site of tumor (n=108) | Right colon | 43 | 39.8 | 0.859 |
| | Left colon | 26 | 24.1 | |
| | Rectum | 39 | 36.1 | |

(Green et al., 2002).

Univariate analysis was performed using the chi-squared test when comparing frequencies between groups. All numerical data are expressed as mean ± SD and differences between means of groups were compared by independent samples T test and analysis of variance. Kaplan-Meier curves and log-rank tests were used for survival analysis. All tests were two sided, with statistical significance attributes to $p < 0.05$. Statistical analysis was performed with SPSS software (version 13.0).

Results

There were 110 patients (62.7% male) with colorectal mucinous adenocarcinoma. These carcinomas comprised 8.57 percent of all colorectal cancers registered in the same period in our center. The male: female ratio was 1.68:1. The median age of these patients at diagnosis was 50.1 (range, 20–81) years. More than 50% of patients were younger than aged 50 years. 38 of 110 patients (34.5 percent) had a family history of colorectal cancer in their first-degree relatives. The mean age of the patients with a family history of colorectal carcinoma did not differ significantly from those without a family history of colorectal carcinoma (mean ages =47.5 vs. 51.4 years; $P = 0.165$). The most symptoms in patients at diagnosis consisted of change in bowel habit (55.5%), abdominal pain (52.7%), blood per rectum (52.7%), weight loss (47.3%), weakness (39.1%) and anemia (30.0%).

The distribution of tumor site was 39.1 percent in right colon, 23.6 percent in left colon and 35.5 percent in the rectum. The median length of the tumors was 5.26 (range, 0.9–18) cm. The majority of MA patients had advanced Stage (54.3 percent; $n = 51$) lesions. Colorectal mucinous carcinoma was most commonly seen in the right colon and rectum respectively (Table 1).

Follow-up data were available for all the patients with

colorectal mucinous adenocarcinoma. Thirty percent ($n = 33$) of the patients died during the study period. All deaths were tumor-related. The median survival is typically defined as the time when 50 percent of the patients have experienced the event of interest. The overall mean and median survival for patients with MA was 91.51 and 48.6 months respectively. The Kaplan-Meier method indicated that, the 1, 3 and 5 year survival rates are 92.6, 80.1 and 41.3 percent, respectively.

By Kaplan-Meier log-rank survival analysis, survival of the patients with MA was not associated with the age at diagnosis, gender, family history of colorectal cancer, tumor grade and tumor site. Conversely, survival of the patients was related to disease stage ($P = 0.023$).

When compared with the 1,163 usual colorectal adenocarcinoma, MA was found more often in the proximal portion of the large intestine ($P = 0.008$). But there were not any difference between mucinous adenocarcinoma and adenocarcinoma regarding to other factors such as age at diagnosis, family history, tumor grade, tumor site and survival.

Discussion

Mucinous adenocarcinoma account for 10–20% in most Western series (Consorti et al., 2000; Du et al., 2004). In our series, mucinous colorectal cancer was responsible for approximately 8.6% of all cases of colorectal adenocarcinoma. There may be a difference in this percentage between Western and Asian populations (Safaee et al., 2008). Some authors find the mucinous neoplasm more common in males (Thomas and Sobin, 1995) and others find no such difference (Du et al., 2004). We also found male predominance in patients with colorectal mucinous adenocarcinoma.

In this study, MA patients were found to be of a similar age to the usual adenocarcinoma patients. The average age at diagnosis was 50.1 years that was lower than western studies (Fante et al., 1997). It may be indicated genetic factors play an important role in the development of colorectal cancer in young patients in our country (Safaee et al., 2008). The clinical presentation was similar to the usual adenocarcinoma with change in bowel habit, abdominal pain and rectal bleeding as the common presentations.

Many authors find a higher proportion of mucinous cancers in the proximal colon, which may be attributed to hereditary factors (Minsky, 1990; Wright and Stewart, 2003; Papadopoulos et al., 2004). Also, in present study, primary tumor site was most frequent in the right colon, followed by the rectum.

In the present study, hereditary factor was noted to be common in mucinous adenocarcinoma; 34.5 percent of the tumors had a positive family history of colorectal cancer.

The 5-year survival rate of patients with colorectal MC has been reported to be from 24% to 57% (Yamamoto et al., 1993) and it was 41.3% in the current study. Our analyses have shown that a poorer prognosis was related to the stage of the disease being treated and to the extent of spread, but was not related to mucinous histology itself. Indeed, the diagnosis of a mucinous adenocarcinoma

is clearly a very important prognostic factor, because it is a principle determinant of disease stage and tumor dissemination.

In conclusion, according to our findings colorectal mucinous carcinomas presented at a more advanced stage, young people, high frequency of family history of cancer and higher right colon location rate, suggests that genetic factors may be play an important role in the development of this disease in our country and screening programs, especially genetic screening programs, should be considered as a main measure for prevention and control of colorectal cancer in Iran. Also further investigation using molecular biological methods is required to elucidate the biologic significance of MC of the colon and rectum.

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