



REVISTA MÉDICA DEL
HOSPITAL GENERAL
DE MÉXICO

www.elsevier.es/hgmx



ORIGINAL ARTICLE

Clinicopathological difference in colorectal cancer in patients under and over forty years



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Received 20 February 2015; accepted 13 August 2015
Available online 23 October 2015

KEYWORDS

Colorectal cancer;
Age;
Histopathology

Abstract Incidence of colorectal cancer is known to increase with age; however, the number of cases diagnosed in young patients is now on the rise. Both histopathology and staging is thought to be more aggressive in the young.

Objective: To determine whether age (<40) is a risk factor for signet ring cell, mucinous, or poorly differentiated adenocarcinoma, and for initial diagnosis at stage 4.

Methods: We conducted a chart review of patients admitted to our ward with colorectal cancer between January 2010 and December 2013. We collected the following variables: sex, age, tumour site, histopathological characteristics, clinical stage and surgery performed.

Results: A total of 152 patients were included, 20 aged 40 years or younger, and 132 aged over 40 years. In the young population, 15% presented aggressive tumours (mucinous or signet ring cell adenocarcinoma), and 25% were diagnosed at stage 4. Analysis of age, aggressive tumour, and stage 4 tumour variables between groups showed no significant differences ($p > 0.05$).

Conclusions: Young (<40 years) age is not a risk factor for presenting aggressive or stage 4 tumours.

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PALABRAS CLAVE

Cáncer de colon y recto;
Edad;
Histopatología

Diferencia clinicopatológica del cáncer de colon y recto en pacientes menores y mayores de 40 años

Resumen El cáncer de colon y recto es una neoplasia con aumento en su incidencia con la edad, sin embargo el diagnóstico en pacientes jóvenes se ha incrementado. La histopatología y el estadio clínico se piensa que es más agresivo en los jóvenes.

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Objetivo: Determinar si la edad menor de 40 años es un factor de riesgo para presentar adenocarcinoma en anillo de sello, mucinoso o de baja diferenciación y para diagnosticarse inicialmente en estadio IV.

Métodos: Se revisaron los expedientes de pacientes con diagnóstico de cáncer de colon o de recto de enero del 2010 a diciembre del 2013 que ingresaron a nuestra Unidad. Se recabaron las siguientes variables: sexo, edad, localización del tumor, características histopatológicas, estadio clínico y cirugía realizada.

Resultados: Se incluyeron 152 pacientes, 20 pacientes de 40 años o menos y 132 pacientes mayores de 40 años. El 15% de la población joven presentó tumores agresivos (adenocarcinoma mucinoso o con células en anillo de sello) y el 25% se encontró en estadio clínico IV durante su valoración. El análisis entre los 2 grupos de pacientes de acuerdo a su edad y las variables tumores agresivos y estadio IV no fue significativa ($p > 0.05$).

Conclusiones: La edad menor de 40 años no es un factor de riesgo para presentar tumores agresivos ni estadio clínico IV.

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Introduction

Colorectal cancer (CRC) causes nearly 608,000 deaths each year.¹

Incidence increases with age, and over 90% of cases present in patients aged over 50 years. Nevertheless, the number of cases in younger (aged 40 years or less) patients, usually with more aggressive histopathology and more advanced tumour staging, is increasing.¹

Histology shows poorly differentiated, mucinous or signet ring cell adenocarcinoma. As younger patients are diagnosed at stage 3 or 4, treatment is usually either aggressive surgical resection or palliative care,¹⁻⁴ suggesting a worse prognosis in the younger patient population.

In this study, we analysed the records of patients admitted to our ward to explore differences in adenocarcinoma differentiation and tumour stage between patients under and over the age of 40 years.

Materials and methods

A total of 165 patients admitted to our ward were diagnosed with colorectal cancer confirmed by histopathology between January 2010 and December 2013. Of these, 13 patients were excluded: 4 due to CRC associated with inflammatory bowel disease, and 9 due to lack of diagnostic histopathology performed in our hospital or tumour staging study. Of the 152 remaining patients, we analysed the following variables: sex, age, tumour site, histopathological differentiation, tumour stage, and surgery performed. Parameters were compared with those of patients aged ≤ 40 years at the time of diagnosis. The following colon segments were analysed: the ascending (right) colon (caecum, hepatic flexure), right half of the transverse colon, left half of the transverse colon, descending colon (sigmoid colon, rectosigmoid junction) and rectum.

Aggressive adenocarcinoma was defined as: poorly differentiated, mucinous, or signet ring cell. According to version

7 of the TNM, stage 4 is distant metastasis with a higher risk for short-term mortality.

Statistical analysis

Parameters obtained were entered into an Excel 2010 database. Measures of central tendency and scatter were calculated for quantitative variables, and odds ratio plus confidence interval were calculated for qualitative variables using the Fisher's exact or Chi-squared test, as applicable. Significance was set at $p \leq 0.05$. Statistical analysis was performed on SPSS version 20.

Inclusion criteria

Patients of legal age, admitted to our ward with colorectal cancer, with complete medical records, and with histopathology and imaging findings to evaluate tumour extension.

Exclusion criteria

Patients whose records did not include the study variables, and tumour associated with inflammatory bowel disease.

Results

Demography

A total of 152 patients were included in the study. Mean age was 57.9 years; 87 were men (57.2%) and 65 were women (42.8%); 20 patients (13.15%) were under 40 years of age.

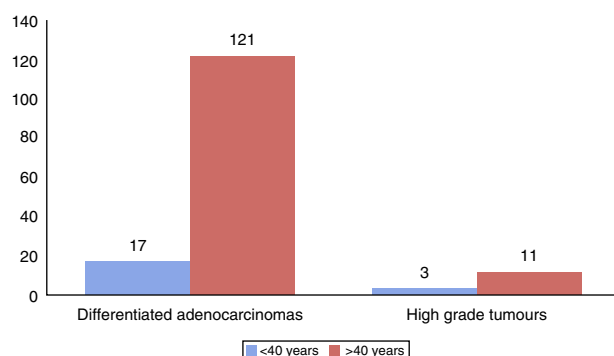


Figure 1 Tumour histopathology.

Tumour characteristics

Tumours were located in the following segments: 27 (17.8%) in the ascending colon, 26 (17.1%) in the descending colon, and 99 (65.1%) in the rectum.

The most common histopathological grade was moderately differentiated adenocarcinoma (76.3%), followed by well-differentiated (6.6%), poorly differentiated (7.9%), mucinous (7.9%) and signet ring cell (1.3%).

Most patients presented at stage IIA (21.7%) and IIIB (20.4%).

The most common surgical procedures were ultralow anterior resection in 19.7% (UAR) and low anterior resection in 18.4%.

Twenty patients were under 40 years of age, and 132 were over this age.

In both groups, patients were predominantly male: 55% (11) vs. 45% (9) in the younger population, and 57.6% (76) vs. 42.4% (46) in the older population.

Rectal tumours were more common than those located in the colon: 65% (13 vs. 7 patients) in the under-40 group, and 65.2% (86 vs. 46 patients) in the over-40 population.

In terms of histopathology, 85% of younger patients had good prognosis (moderately and well-differentiated), and 15% had aggressive (poorly differentiated, mucinous, or signet ring cell) tumours. In the over-40 group, these variables were 91.7% and 8.3%, respectively; the difference was not statistically significant ($p = 0.39$) (Fig. 1). In the younger population, 25% (3) presented with stage 4 cancer vs. 15.8% (17) in the over-40 groups; the difference was not statistically significant ($p = 0.32$) (Fig. 2).

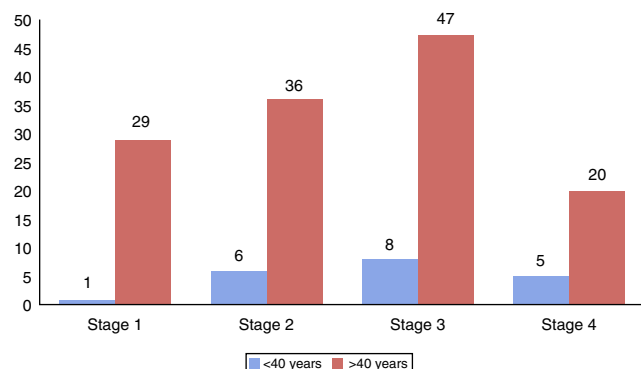


Figure 2 Tumour staging.

Discussion

There is no consensus on the definition of “young” CRC cancer patients. In some studies, young patients are under 50 years,^{5–7} although others set the limit at 30 years.⁸ Most authors, however, define “young” as 40 years or less, and this is the definition used in our study.^{1,4,9,10}

According to the literature, CRC is more common in the over-50 age group, and is found in only 7% of patients aged <40 years.^{1,4} In the USA, however, prevalence among the 20- to 40-year population increased to 17% from 1973 to 1999, a rate that is similar to the current prevalence (13%) in Mexico. A study published by a group from the General Hospital of Mexico in 2009 that included patient data from the preceding 20 years found a CRC prevalence of 6.4% in the under-40 population.¹¹ An Argentinian study published by Iriñiz et al. reported a prevalence of 17.5% in the under-40s.¹²

Most of these studies found no significant difference in gender among CRC patients aged under 40 years. In our study, 57.2% of the total sample and 55% of the under-40 population were men. In some studies, the proportion of women outweighed that of men.¹¹

We also analysed tumour site according to different segments of the colon and the rectum. Most studies report the rectum and the sigmoid colon as the site of over 33% of tumours.^{11,13,14} In our study, 65.1% of tumours were located in the rectum. In our ward, this could be due to 2 factors: (1) colon tumours are managed in the emergency unit and in the general surgery and oncology wards; (2) patients with rectal tumours are usually referred to our ward with gastrointestinal bleeding due to haemorrhoidal disease.

Histopathological grading in our population showed 76.3% of patients with moderately differentiated tumours, a finding that is consistent with most studies analysed.^{11,13,14} Among the under-40 population in our study, 15% presented with mucinous or signet ring cell adenocarcinoma, a rate that is below that reported elsewhere in the literature. Khalifa et al.¹⁴ in 2013, reported 31% of young patients with mucinous tumours, and Ganapathi et al.¹ in 2011 reported a prevalence of 32%.

Survival rate in young patients is considered to be poorer than in the older population. Many studies^{15–18} have reported more advanced tumour, and consequently worse prognosis, in younger patients.

We, however, found no significant differences between study groups with respect to presentation at stage 4. Chou et al.⁴ reported 3 times as many patients at this stage, with a frequency of 82%, a significant finding when compared with the older group analysed in this study.

Conclusion

Younger age (40 years or less) is not an independent risk factor for presenting a more aggressive tumour type or more advanced stage.

Conflict of interest

The authors declare that they have no conflict of interests.

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