Outcomes following a diagnosis of colorectal cancer

Structure of talk

Present and critically review studies available in the literature
  • Incidence by ethnic group
  • Stage at presentation
  • Survival
  • Outcomes in the context of inflammatory bowel disease

Current SEER data for CRC (Archie Bleyer)
Outcomes and age

138 CRC patients <40 years compared to 339 patients >60 years (Taiwan)
- 14.5% mucin producing (cf 4.7%)
- 7.2% poorly differentiated (cf 3.3%)
- More advanced stage
- Operative mortality lower (0.7% vs 5%)
- Cancer specific survival reported to be similar in Stages I-III, better in stage IV

110 Singaporean patients <40 years (5.1%) compared to 2064 >40 years
- Predisposing conditions and genetic factors in 21% vs 2%
- No difference in stage or site at presentation
- No difference in characteristics (mucinous &c)
- Mean follow up of 32 months
- 5YOS 55% vs 54%

Outcomes and age

Norwegian Rectal Cancer Project

1,354 patients younger than aged 70 years treated for cure
• 45 patients younger than aged 40 years (3%)
• significantly higher frequencies of poorly differentiated tumors (27 vs. 12-16 percent; P = 0.014)
• N2-stage (37 vs. 13-18 percent; P = 0.001)

<table>
<thead>
<tr>
<th></th>
<th>Metastasis</th>
<th>5YOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 40 years</td>
<td>38%</td>
<td>54%</td>
</tr>
<tr>
<td>Over 40 years</td>
<td>20-26%</td>
<td>71-88%</td>
</tr>
</tbody>
</table>
Outcomes and age

Turkey
136 patients under 45 years (20%) among 680 total
  • 10 patients with family history
  • Of patients considered resectable (118), 61 (45%) were found to be metastatic at operation

Egypt
1608 CRC in 4 hospitals (85% of national burden)
  • 35.6% under 40 years, constant over time and site
  • >50% rectal cancers
  • 30.6% mucin producing (cf 14% over 40 years)
Outcomes and age

Retrospective review of 186 patients younger than 40 years at MDACC
• median age 34.3 years, median follow-up 9.4 years
• Stage III-IV 66%
• Histopathologic indicators of more aggressive tumor biology were present at a significantly higher frequency in young patients compared with patients older than 40 years (p < 0.001).
  • Poorly differentiated tumor grade 41%
  • signet-ring cell tumors 11%
  • infiltrating tumor leading edges 69%

Retrospective review of 62 patients OHSU
• 3.1% of total CRC population
• 48% metastatic at diagnosis
• Stage for stage, similar survival
Outcomes and age

50 patients Harbor-UCLA medical centre 1956-85
- 7-39 years of age
- 2 inflammatory bowel disease, 3 FAP
- 45% Dukes C, 23% Dukes D
- 5YOS 28%

French retrospective survey
- 4643 cases of CRC 1976-96
- 146 under 45 years (3%)
- Stage III patients more frequent in younger patients
- Post-operative mortality lower under 45 years (2.1% vs 8.4%)
- Stage for stage, survival better for under 45 years compared to over 45 years
- Gender prognostic in multivariate analyses
Outcomes and age

NCI in Milan
- 27 patients <30 years, 7 patients <18 years
- Under 18 years
  - 5/7 unfavourable histology
  - 6/7 advanced disease at diagnosis
  - 6/7 relapsed/progressed
  - 5 died
  - 23% 5YOS
- 19-29 years
  - 72% 5YOS

39 patients under 30 years of age
- 6 had Family history, 4 index cases of FAP
- Rectal cancers in 43%
- 70% at advanced stage
- 11 deaths, 3 alive with disease, 14 no evidence of disease (of 29 curative resections attempted)
Outcomes and age

South Korean
28 CRC patients under 20 years
  • Location evenly distributed
  • Mucinous cancers more common
  • 22/28 stage III or IV
  • 5YOS 21%

Malaysia
21 patients under 30 years
  • Ethnic Chinese > Malay > Indian
  • 25% caecal, mucinous and advanced stage dominated
  • 5YOS 25%
Outcomes and age

Surgical outcomes

53 patients with FAP treated with ileal pouch-anal anastamosis (IPAA)
  • 31 under 40 years, 22 over 40 years
  • No difference in functional outcomes and QoL
  • Less nocturnal bowel movements in younger patients at 1 and 3 years
  • Fewer bowel movements/day than older patients at all stages of follow up

Outcomes and age

Inflammatory bowel disease and cancer

290 patients with IBD-associated CRC (241 with chronic ulcerative colitis and 49 with Crohn's disease) compared to sporadic CRC patients at the Mayo Clinic

- The median age at diagnosis of IBD-related CRC was 48 years
- 55% of IBD-related tumors were distal to the splenic flexure compared with 78% of sporadic tumors

5YS

- 163 IBD-associated CRC patients=54%
- 164 sporadic CRC patients=53%
Outcomes and age

Inflammatory bowel disease and cancer

Danish population-based registry

• 279 patients with UC-associated CRC
  • Younger (median age of onset 63 vs 71 years)
  • Stage similar to overall CRC
  • Mortality rate ratios higher
    • 1.24 (95% CI 1.02-1.51)

• 100 patients with CD-associated CRC
  • Younger age of onset
  • Stage similar
  • Hazard ratio higher
    • 1.82 (95% CI 1.36-2.43)

• COMPLIANCE WITH SCREENING PROGRAMMES NOT REPORTED

## Summary

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Stage</th>
<th>Survival (5YS)</th>
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<tbody>
<tr>
<td>&lt;40</td>
<td>186</td>
<td>More advanced</td>
<td>NA</td>
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<tr>
<td>&lt;45</td>
<td>146</td>
<td>More advanced</td>
<td>No effect (corr. for stage)</td>
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<tr>
<td>&lt;45</td>
<td>136</td>
<td>45% Advanced</td>
<td>NA</td>
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<tr>
<td>&lt;40</td>
<td>110</td>
<td>No age effect</td>
<td>55%</td>
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<tr>
<td>&lt;40</td>
<td>62</td>
<td>58% Advanced</td>
<td>NA</td>
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<tr>
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<td>138</td>
<td>No age effect</td>
<td>No effect (corr. for stage)</td>
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</tr>
<tr>
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<td>50</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td>&lt;30</td>
<td>21</td>
<td>NA</td>
<td>25%</td>
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<td>28</td>
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<td>21%</td>
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<tr>
<td>&lt;20</td>
<td>7</td>
<td>84%</td>
<td>23%</td>
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• Retrospective, historical
• Often uncontrolled
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Age and survival
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• Under 30 years of age, ? survival may be worse allowing for stage
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Age and surgical outcomes
• The young do better
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Age and surgical outcomes
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Inflammatory bowel disease and outcomes
• Suggestion that hazard ratio for death from CRC is increased
• No data on psychosocial factors and adherence to surveillance
The **ABCs** of

**Acute Lymphoblastic Leukemia, Breast Cancer and Colon Cancer**

in Adolescent and Young Adult (AYA) Americans

Archie Bleyer, MD

in recognition of the 10th anniversary of the 1st NCI AYAO Workshop (June 1999)
Incidence since 2000

• Colon Cancer
Incidence, 2000-2006, SEER17*

ALL, Colon Cancer, Breast Cancer

Incidence per Million per Year

Age at Diagnosis (Years)

Breast Cancer in Females

Colon Cancer

ALL
Relative Incidence of Top 12 Most Frequent Types of Cancer
Age 15-39, 2000-2004, SEER17

- **Females**
  - Breast Cancer: 26%
  - Colorectal Cancer: 15%
  - Endometrial Cancer: 9%
  - Thyroid Cancer: 9%
  - Leukemia: 3%
  - Melanoma: 3%
  - Uterine Cervix Cancer: 2%
  - CNS Cancer: 1%
  - Other: 1%

- **Males**
  - Breast Cancer: 19%
  - Colorectal Cancer: 17%
  - Endometrial Cancer: 7%
  - Thyroid Cancer: 7%
  - Leukemia: 4%
  - Melanoma: 3%
  - Uterine Cervix Cancer: 3%
  - CNS Cancer: 3%
  - Other: 2%
Relative Incidence of Top 10 Most Frequent Types of Cancer in Males <40 Years of Age, by 5 Year Intervals
ICD, 2000-2004 SEER17

Age at Diagnosis (Years)

15-19  20-24  25-29  30-34  35-39

Other  13%  15%  15%  15%  15%
Sarcoma  2%  2%  2%  2%  2%
Lung  6%  8%  10%  10%  10%
Mouth/Throat  3%  5%  5%  5%  5%
Kidney  4%  4%  4%  4%  4%
Leukemia  21%  18%  16%  14%  12%
CNS  23%  29%  27%  21%  18%
Thyroid  16%  9%  6%  6%  6%
Melanoma  14%  11%  8%  8%  8%
Testis Cancer  8%  8%  8%  8%  8%
Colorectal  1%  1%  1%  1%  1%

CNS excluding Kaposi Sarcoma

Lymphoma

Other
Sarcoma
Lung
Mouth/Throat
Kidney
Leukemia
CNS
Thyroid
Melanoma
Testis Cancer
Colorectal
Lymphoma
Relative Incidence of Top 10 Most Frequent Types of Cancer in Females 15-39 Years of Age by 5-Year Intervals

ICD, 2000-2004 SEER17

- Breast
- Uterine Cervix
- Thyroid
- Lymphoma
- Colorectal
- Melanoma
- Ovary
- Endometrium
- Leukemia
- CNS
- Other

Age at Diagnosis (Years)

15-19 | 20-24 | 25-29 | 30-34 | 35-39

0% | 10% | 15% | 15% | 13% | 9%
Survival
2000-2006

• Colon Cancer
5-Year Relative Survival, 2000-2006, SEER 17

- Breast Cancer in Females
- Colon Cancer
- ALL

Survival (%) vs. Age at Diagnosis (Years)
5-Year Relative Survival, Colon Cancer, 2000-2006, SEER17 with $2^0$ polynomial regressions

American Indian/Alaska Native

Survival (%) vs. Age at Diagnosis (Years)
5-Year Relative Survival, Colon Cancer, 2000-2006, SEER17
with $2^0$ polynomial regressions

Asian/Pacific Islander

Survival (%) vs. Age at Diagnosis (Years)
5-Year Relative Survival, Colon Cancer, 2000-2006, SEER17
with $2^0$ polynomial regressions

Hispanic/Latino

Age at Diagnosis (Years)

Survival (%)
5-Year Relative Survival, Colon Cancer, 2000-2006, SEER17

with $2^0$ polynomial regressions

Non-Hispanic White

Black/African American
5-Year Relative Survival, 1975-1997 by Calendar Year, SEER9
Colon Cancer
Average Annual % Change (AAPC) 5-Year Relative Survival
Colon Cancer
1975 to 1997, SEER9

**Average Annual % Change (AAPC)**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>AAPC</th>
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<tbody>
<tr>
<td>&lt;0.5</td>
<td>-0.43</td>
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<tr>
<td>-0.5 to -0.13</td>
<td>-0.13</td>
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<td>0.18</td>
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