The Impact of Race or Ethnicity in Crohn's Disease

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Race & Ethnicity in IBD – Historical View

- Caucasians, especially northern European ancestry
  - Scandinavia
  - Northern Europe
  - British Isles
  - United States and Canada
- Increased risk in Jews
- Uncommon in African Americans and other racial minorities in U.S.
Risk of Crohn’s Disease Among Jews: Population-Based Estimate in Wales

Prevalence (per 100,000)

Mayberry et al: Digestion 1986
Trends in Prevalence of Crohn’s Disease in Tel Aviv 1970-80

Adjusted Prevalence (per 100,000 PYR)

Europe-America
Israel
Asia-Africa

Fireman et al: Am J Gastroenterol 1989
Trends in Incidence of Crohn’s Disease By Race: Baltimore

Calkins et al: Dig Dis Sci 1984
Racial/Ethnic Variation in Crohn’s Prevalence: Southern California 1984-88
Shifting Paradigms?

- More common in African-Americans
- More common in those of Hispanic ancestry
- More common in Asians
  - Native Asians (East, South)
  - South Asian migrants
Temporal Trends in Incidence of Crohn’s Disease in Europe and North America, 1955-95

Loftus EV. Gastroenterology 2004
Study of pediatric IBD patients evaluated at Emory 1986-95

- Incidence of Crohn’s rose from 7 to 12 per 100,000 over the study period
- Incidence of UC remained stable at 5 – 7 over the study period
- Rates were broadly similar to those of whites

Racial/Ethnic Minorities with IBD - Texas

• Mexican-Americans more likely to get UC than Crohn’s
  – More proximal disease extent
  – Fewer extraintestinal manifestations
  – High prevalence of pANCA (100%)

• African-Americans more likely to have Crohn’s
  – More colonic or perianal, less ileal
  – More arthritis and uveitis

Racial/Ethnic Minorities with Crohn’s – Six Centers

• African Americans (n = 127)
  – Upper gut Crohn’s: OR, 2.8 (1.4-5.5)*
  – Colonic disease: OR, 1.9 (1.1-3.4)
  – Perianal disease: OR, 1.7 (1.03-2.8)
  – More extraintestinal

• Hispanics (n = 169)
  – Perianal disease: OR 2.9 (1.8-4.6)*
  – Erythema nodosum: OR 3.3 (1.7-6.4)

* controls = 830 non-Hispanic whites

Nguyen GC et al. Am J Gastroenterol 206;101;1012-23.
Does Race Influence Behavior or Severity of Crohn’s?

- Comparison between 55 African Americans and 155 whites with Crohn’s at Univ of Maryland
- African Americans more likely to have colonic and/or perianal disease
- No differences in perforating behavior, need for surgery, and prevalence of EIMs

Ethnic Variation of IBD in Canada

- Highest IBD incidence rates in suburban Winnipeg, lowest rates in northern province and urban core (more First Peoples*)
- Incidence and prevalence of Crohn’s is lowest in British Columbia, which has the highest prevalence of visible minorities

* Aboriginal Canadians (aka Native Americans)

Ulcerative Colitis in Punjab, India

- Province of northern India
  - 20 million people in 1991
  - 2/3 Sikh, 1/3 Hindu
- Survey of randomly selected districts by multidisciplinary team for diarrhea or rectal bleeding
  - If yes, stool studies and sigmoidoscopy
- Same areas re-surveyed the following year
- Prevalence 44.3, incidence 6.0

Incidence of IBD Among South Asians and Native Britons in Leicestershire, 1981-89

Adjusted incidence (per 100,000 PYR)

- Europeans
- South Asians Total
- Hindu
- Sikh
- Muslim

CUC
CD

Probert et al, Gut 1992:33:687
Jayanthi et al, QJM 1992:82:125
Period Prevalence of IBD in Singapore, 1985-96

Lee et al, J Gastroenterol Hepatol 2000;15:622
Prevalence of CARD15 Mutations Among Pediatric Crohn’s

Are Ethnic Variations Independent of Genetic Variations?  Are Ethnic Variations Independent of Genetic Variations?

Risk Factors Among 232 Manitobans with Crohn’s Disease

<table>
<thead>
<tr>
<th>Factor</th>
<th>OR (95% CI)</th>
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<tbody>
<tr>
<td>CARD15 hetero</td>
<td>3.7</td>
</tr>
<tr>
<td>CARD15 comp het/homo</td>
<td>40.0</td>
</tr>
<tr>
<td>Jewish ethnicity</td>
<td>18.5</td>
</tr>
<tr>
<td>Family history Crohn’s</td>
<td>6.2</td>
</tr>
<tr>
<td>Current smoking</td>
<td>3.0</td>
</tr>
</tbody>
</table>

**Multivariate analysis**

Genetics Can’t Explain It All

• Prevalence of NOD2/CARD15 mutations varies widely in populations
  – Low in Scandinavia, Finland, Australia, Celtic regions
  – High in Belgium, Canada
  – Doesn’t correlate tightly with Crohn’s incidence rates

• Don’t forget the twin studies!!!
  – 20-50% concordance in identical twins

Conclusions

- Incidence and prevalence of IBD still rising in many areas
- Jews have increased risk relative to non-Jewish Caucasians
- Prevalence of IBD in African-Americans is at least 2/3 that of Caucasian population, perhaps higher
- Higher prevalence of colonic and perianal Crohn’s among African Americans, but no clear difference in behavior or need for surgery
Conclusions

• Prevalence among Hispanics rising, but difficult to quantify
• Crohn’s is now being reported in ‘new’ areas such as East Asia, South Asia, and among migrants from South Asia
• Not clear if genetics can completely explain ethnic/racial differences in Crohn’s incidence and phenotype