The Changing Prognosis of Ulcerative Colitis and Crohn Disease by Decades

Burton I. Korelitz, MD and Judy Schneider

We present a bird’s eye view of the prognosis for both ulcerative colitis and Crohn disease as contained in the database of an Inflammatory Bowel Disease gastroenterologist covering the period from 1950 until the present utilizing the variables of medical therapy, surgical intervention, complications, and deaths by decades.

Lay Summary
From a 60-year experience with the diagnosis and management of Crohn disease and ulcerative colitis, 3300 patients were entered into a database according to decade of diagnosis. Analysis shows the incidence of hospitalizations, surgical interventions, and extraintestinal manifestations have all decreased coincident with immunosuppressive and biological therapies.

Key Words: ulcerative colitis, Crohn disease, decades, biologics, surgery, complications, cancer

INTRODUCTION
The history and prognosis of any disease entity remain a work in motion, and this is clearly evident with the rapid increase in drugs available for the treatment of both ulcerative colitis (UC) and Crohn disease (CD). Accordingly, the period of time in which we have been involved in the study and management of inflammatory bowel disease (IBD) has seen outstanding changes. The span of observation concerned began in the 1950s and has extended to the present. To demonstrate the changes that have taken place we have arbitrarily chosen decades as the segments of time in which to document well-defined indicators of IBD activity and thereby prognosis.1–5

METHODS
From our database of more than 3300 patients with IBD seen personally by the first author, we compared choice indicators of disease outcome from 6 decades: (1) 1961–1970, (2) 1971–1980, (3) 1981–1990, (4) 1991–2000, (5) 2001–2010, and (6) 2011 to the present, for both UC and CD. These indicators include (1) the number of IBD-related surgeries, (2) the number of related deaths, (3) the number of instances of toxic megacolon, considered a specific complication of both UC and CD, and (4) the occurrence of colon cancer, also considered specific for UC and CD. Note that the number of UC and CD patients was fairly stable across decades.

RESULTS
The number of related surgeries for UC clearly reaches a peak in the decade 1981–1990 and fell thereafter. Patients died of complications of UC including surgical complications with a peak during the decade 2001–2010. The dramatic occurrence of toxic megacolon was most prevalent during 1981–1990, and the incidence of colon cancer, a late complication, during 1991–2000 (Figs. 3, 4). The use of 6-MP to treat UC also peaked from 1991 to 2010 and biologicals followed from 2001 to the present.

The number of CD-related surgeries peaked from 1981 to 1990 and then began to fall. Similarly, death from CD peaked from 1991 to 2000. Toxic megacolon complicating CD was never as prevalent as in UC, peaked in the decade 1981–1990, and carcinoma of the colon in CD was highest during 1991–2000 (Figs. 3, 4). The use of 6-MP to treat UC also peaked from 1991 to 2010 and biologicals followed from 2001 to the present.

The number of CD-related surgeries peaked from 1981 to 1990 and then began to fall. Similarly, death from CD peaked from 1991 to 2000. Toxic megacolon complicating CD was never as prevalent as in UC, peaked in the decade 1981–1990, and carcinoma of the colon in CD was highest during 1991–2000 (Figs. 3, 4). The use of 6-MP was maximum from 1981 to 2000 whereas biologics dominated the field of therapy thereafter.
TABLE 1. Occurrence in the Course of UC by Decade

| Decade       | Surgeries | Deaths | Toxic Megacolon | Carcinoma of Colon | 6-MP Rx | Biologics Rx |
|--------------|-----------|--------|----------------|--------------------|--------|-------------|
|              | No. Patients | No. Patients | No. Patients | No. Patients | No. Patients | No. Patients |
| <1960        | 24         | 0      | 0              | 0                  | 0      | 0           |
| 1961–1970    | 58         | 5      | 2              | 1                  | 19     | 0           |
| 1971–1980    | 113        | 12     | 5              | 3                  | 44     | 0           |
| 1981–1990    | 209        | 14     | 8              | 13                 | 109    | 0           |
| 1991–2000    | 109        | 14     | 2              | 16                 | 131    | 6           |
| 2001–2010    | 57         | 19     | 4              | 3                  | 121    | 55          |
| 2011 to present | 12       | 6      | 1              | 1                  | 36     | 33          |

TABLE 2. Occurrence in the Course of CD by Decade

| Decade       | Surgeries | Deaths | Toxic Megacolon | Carcinoma of Colon | 6-MP Rx | Biologics Rx |
|--------------|-----------|--------|----------------|--------------------|--------|-------------|
|              | No. Patients | No. Patients | No. Patients | No. Patients | No. Patients | No. Patients |
| <1960        | 130        | 0      | 0              | 0                  | 0      | 0           |
| 1961–1970    | 252        | 0      | 0              | 0                  | 0      | 0           |
| 1971–1980    | 473        | 4      | 2              | 5                  | 116    | 0           |
| 1981–1990    | 681        | 20     | 5              | 9                  | 346    | 0           |
| 1991–2000    | 451        | 36     | 1              | 29                 | 362    | 51          |
| 2001–2010    | 294        | 23     | 1              | 4                  | 202    | 154         |
| 2011 to present | 60       | 4      | 0              | 0                  | 50     | 47          |

FIGURE 1. UC: drug treatment, surgeries, and deaths by decades.
DISCUSSION

During the time segment before 1960 drug management of both UC and CD was heavily weighted by treatment with sulfasalazine, 5 aminosalicylic acid products, adrenocorticotropic hormone, and corticosteroids, and supportive therapy with antibiotics and blood transfusions. During the next 3 decades, successful outcomes were heavily weighted by immunosuppressives, 6-MP more than azathioprine at our institution. Subsequently, the course of both UC and CD has been dramatically influenced by the treatment with biologicals, most often with infliximab, usually with continuation of the 6-MP.

Since the advent of 6-MP and subsequently biologicals, often used in combination, the number of...
hospitalizations (data not available) has dramatically fallen; in fact, the Fellows in Gastroenterology at our institution now see most of their IBD patients in the outpatient service. Similarly, the number of IBD-related surgeries has fallen markedly and emergency procedures have become rare. Patients rarely die any longer from UC or CD. Uveitis, which the senior author had often seen early in his IBD practice is now a rare phenomenon. This is also true of pyoderma gangrenosum and even erythema nodosum.

While the information presented here offers no surprises and all IBD clinicians have had similar experiences, we nevertheless document the changing and markedly improved prognosis for both UC and CD. Clearly, treatment with biologicals have contributed to a dramatically favorable outcome building on the earlier success of immunosuppressives, particularly 6-MP. Unfortunately, the causes of UC and CD remain unknown. When etiology catches up with successful disease management, perhaps IBD will become rare.

DATA AVAILABILITY
Data are not publicly available.

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