

The Incidence Rate of Inflammatory Bowel Disease in an Urban Area of Iran: A Developing Country

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ABSTRACT

BACKGROUND

The incidence of inflammatory bowel disease (IBD) varies among different societies. The aim of this study is to determine the incidence rate of IBD in Kerman, a city in Southeast Iran.

METHODS

All medical records that indicated a new diagnosis of ulcerative colitis (UC) or Crohn's disease (CD) were retrieved from the gastrointestinal endoscopy and pathology departments of 12 centers from October 2011 to September 2012.

RESULTS

The incidence rate of UC in Kerman was estimated at 4.98/100,000 (95% CI: 2.44-6.94). The mean age of patients was 39.4 years and male to female ratio was 0.89:1.0. UC patients had the following prevalence: cigarette smoking (30%), appendectomy (36%) and oral contraceptive (OCP) use (78.9%). The incidence rate of CD was 0.8/100,000 (95% CI: 0.6 4-1.14). The mean age at diagnosis was 33.3 years and male to female ratio was 0.5:1.0. Cigarette smoking was reported in 33.3%, appendectomy in 66.6% and OCP using in 75% of CD patients. Rectal and distal colitis, left side colitis and extensive colitis was seen in 20 (55.4%), 12 (33.3%) and 4 (11.1%) of patients with UC, respectively. All patients with CD had large intestinal involvement and one case (16.6%) had ileocolonic disease.

CONCLUSION

Our study has shown that the incidence rate of both UC and CD in Kerman is lower than Western populations but it is the same as some Asian countries. Characteristics of disease involvement in this study are similar to other studies that have been conducted in Iran and elsewhere.

KEYWORDS

Incidence; Inflammatory bowel disease; Southeast Iran

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INTRODUCTION

Inflammatory bowel disease (IBD) is characterized by two major disorders, ulcerative colitis (UC) and Crohn's disease (CD). Genetics and environmental factors are considered in the pathophysiology of these multifactorial disorders.¹ Due to the effect of both genetic and environmental factors on the etiology of IBD, variations exist in the epidemiology and incidence of these disorders worldwide.^{1,2} The highest annual incidence rate of UC is 24.3 per 100,000 person-years in Europe compared to 6.3 per 100,000 person-years in Asia and the Middle East. Furthermore, in CD, the highest annual incidence is 20.2% per 100,000 person-years in North America in contrast to 5 person-years in Asia and the Middle East.³⁻⁵

Although there are limited studies about the incidence of IBD in developing countries, a systematic review in 2012 has shown that both incidence and prevalence of CD and UC is increasing over time, in both Western and developing societies.⁶

Due to the scarcity of studies that pertain to the epidemiology of IBD in Iran, the incidence and prevalence of IBD cannot be accurately determined. This study aims to ascertain the incidence of IBD in Kerman, the capital of the largest province in Southeast Iran.

MATERIALS AND METHODS

Study population

This survey was performed over a period of one year from October 2011 to September 2012 in Kerman and its suburbs. Kerman is the 12th most populous city in Iran. According to the latest national census in 2011, its population was 722,484 persons that resided in 171,389 households.

Survey method

This was a cross-sectional study of medical records of patients diagnosed with UC or CD. Initially the data were collected from all related departments, including the Pathology and Gastrointestinal Endoscopy sections of academic hospitals and private offices, 12 centers in total. Subsequently telephone interviews were performed with the patients

and after a short explanation, patients' demographic characteristics, clinical presentations of the disease, past medical history of appendectomy, drug history of oral contraceptive use and habitual history of cigarette smoking were obtained. All available laboratory data, imaging or endoscopic studies were collected.

The diagnosis of UC was considered in cases where colonoscopy findings were positive for erythema, loss of the usual fine vascular pattern, surface granularity of the mucosa, friability, presence of pseudopolyps, erosions or ulcers and histopathology reports, which included the presence of inflammation and/or distortion of crypts and/or crypt abscesses. CD was defined as discontinuous (skip) lesions, aphthous lesions, cobblestone appearance, mucosal ulceration, and existence of perianal disease (skin tags, abscess, fistula) found on endoscopy; radiologic evidence of skip lesions, stricturing disease, fistulizing disease; and histopathology report of non-caseating granulomas along with chronic inflammation.

Ultimately, the diagnosis of CD or UC was based on a combination of clinical, endoscopic, radiological and histopathological findings and verified by an expert gastroenterologist. Patients who resided outside the Kerman area, in addition to those with undetermined colitis, lymphocytic and collagenous colitis (microscopic colitis) were excluded from the study.

The extent of CD was determined by endoscopic and radiological methods and classified as either upper gastrointestinal, small bowel, large bowel or anorectal disease. The anatomical extent of UC was determined by the first-time colonoscopy and categorized as distal colitis (limited to the rectum and sigmoid colon), left side colitis (disease distal to the splenic flexure) or extensive colitis (extending proximal to the splenic flexure).⁷

Statistical analysis

We calculated the crude incidence rates for UC and CD as number of patients per 100,000 population. The 95% confidence intervals (95% CI) for incidence rates were estimated. All patients who were

Table 1: Characteristics of inflammatory bowel disease (IBD) patients during 2011-2012 in Kerman city, Iran.

Characteristics	Ulcerative colitis (UC) N=36	Crohn's disease (CD) N=6
Female (N)	19	4
Male to female ratio	0.89:1	0.5:1
Mean age at diagnosis (years)	39.4	33.3
Smoking, N (%)	11 (30)	2 (33.3)
Oral contraceptive pill (OCP) use in females, N (%)	15 (78.9)	3 (75)
Previous appendectomy, N (%)	13 (36)	4 (66.6)
UC: Extent of disease, N (%)	Distal colitis	20 (55.4)
	Left side colitis	12 (33.3)
	Extensive colitis	4 (11.1)
	Only small intestinal involvement	0
CD: Extent of disease, N (%)	Only large intestinal involvement	5 (83.3)
	Large and small intestinal involvement	1 (16.6)
	Perianal disease	0
	Upper gastrointestinal involvement	0

residents of Kerman and its suburbs with diagnoses of UC and CD were included in this study. Descriptive statistical analyses were performed with SPSS version 21.

Ethic

All Patients consented to participate and the Ethical Review Committee of the Faculty of Medicine, Kerman University of Medical Sciences approved this study.

RESULTS

A total of 42 patients (UC = 36, CD = 6) were newly diagnosed during the study year. The incidence of UC was 4.98 per 100,000 (95% CI: 2.44-6.94) and for CD it was 0.8 per 100,000 (95% CI: 0.6 4-1.14). Clinical characteristics of IBD patients are shown in Table 1.

The mean age at diagnosis was 39.4 years (range: 20 to 80 years) for UC patients and 33.3 years (range: 26 to 45 years) for CD patients. From 36 patients with UC, 19 were female with a male to female ratio of 0.89:1.0. Out of 6 patients with CD, 4 cases were female with a male to female ratio of 0.5:1.0.

The extent of disease in UC was distal colitis in 20 (55.4%), left side colitis in 12 (33.3%), and extensive colitis in 4 (11.1%) patients.

There were 5 (83.3%) patients with CD who solely had large bowel disease and only 1 (16.6%) had involvement of both the large bowel and terminal ileum. Upper gastrointestinal and perianal involvement was not observed at the onset of disease in patients with CD.

A history of previous and recent cigarette smoking was present in 11 (30%) UC patients and in 2 (33.3%) CD patients. A history of appendectomy was positive in 13 (36%) patients with UC while it was present in 4 (66.6%) CD patients. Among female cases, 15 (78.9%) UC patients and 3 (75%) CD patients had histories of oral contraceptive (OCP) use.

DISCUSSION

In the present study the incidence rates were 4.98 per 100,000 people for UC and 0.8 per 100,000 people for CD in a local urban area in Southeast Iran. According to our knowledge, no study has been published that discussed the incidence of IBD in Iran; the majority of previous studies focused on the prevalence of IBD cases.⁸⁻¹¹ Our result showed that the incidence of IBD in Kerman was lower than Western countries but similar to some Asian and Middle East studies.³⁻⁵ Recent studies have shown that the prevalence of both UC and CD is increasing in Iran.¹¹⁻¹³ In

a study in the Kingdom of Saudi Arabia over a period of 17 years, the prevalence of UC was constant whereas CD significantly increased.¹⁴

Overall, the incidence and prevalence of IBD in Asia are lower than Western countries but a changing pattern has been observed during recent decades.⁶ This increasing pattern might be due to changing environmental factors such as improvement in hygiene status, increased antibiotic use, vaccinations, Westernization of diet or improved diagnosis of these disorders.^{6,15} The incidence of IBD has been shown to vary in different regions of Asia. For example, the Japanese, the Middle East population and Indians in Southeast Asia are highly susceptible to IBD compared to Chinese and Malaysians.^{15,16}

In our study, the male to female ratio was 0.5:1 for CD and 0.89:1 for UC. These ratios were similar to the results of another study performed on 500 cases of IBD in metropolitan Tehran.¹² Gender predilection was not found in most studies for both CD and UC, however a higher male to female ratio in CD has been reported in the other studies were performed in the other societies.¹⁷⁻¹⁹

Consistent with other studies, in our study UC was diagnosed at an older age compared to CD.^{20,21} In a previous study on 85 cases of UC in Kerman by Zahedi et al., the mean age at time of diagnosis was 33.31±13.12 years.²²

In our study the rectum and distal part of the colon were more frequently involved (55.4%) in UC cases, which was similar to a study by Aghazadeh et al. who reported involvement in 51.9% of cases.¹⁰ In hospital-based studies from different parts of Asia, proctitis was seen in 9%-45% of cases and extensive colitis ranged from 20% to 48%.⁶

In our study, at the time of diagnosis, all patients with CD had involvement of the large intestine. Less small bowel disease involvement might be attributed to inadequate investigation and/or improper data collection in the Endoscopic and Pathology Departments. In a study by Darakhshan et al, colonic disease was reported in 75% and ileal involvement was seen in 14.58% of cases.²³ Cecal and ileal involvement has been reported more frequently in some regions of Asia.²⁴⁻²⁶

In order to show the true incidence of IBD we relied on confirmed medical cases as documented in their medical records, therefore some IBD cases might have been omitted. This was the major limitation of the current study. It was possible that we missed cases which might have been investigated in other centers outside the city of Kerman. In order to define the accurate incidence of IBD in Iran, we need a precise multicenter national survey.

The incidence rate of IBD in Kerman seems to be lower than Western societies and is comparable to other areas in Asia and the Middle East. Characteristics of disease involvement are similar to other studies performed in Iran and other societies.

CONFLICT OF INTEREST

The authors declare no conflict of interest related to this work.

REFERENCES

- Loftus EV Jr. Clinical epidemiology of inflammatory bowel disease: Incidence, prevalence, and environmental influences. *Gastroenterology* 2004;**126**:1504-17.
- Cosnes J, Gower-Rousseau C, Seksik P, Cortot A. Epidemiology and natural history of inflammatory bowel diseases. *Gastroenterology* 2011;**140**:1785-94.
- Thia KT, Loftus EV Jr, Sandborn WJ, Yang SK. An update on the epidemiology of inflammatory bowel disease in Asia. *Am J Gastroenterol* 2008;**103**:3167-82.
- Prideaux L, Kamm MA, De Cruz PP, Chan FK, Ng SC. Inflammatory bowel disease in Asia: a systematic review. *J Gastroenterol Hepatol* 2012;**27**:1266-80.
- Hou JK, El-Serag H, Thirumurthi S. Distribution and manifestations of inflammatory bowel disease in Asians, Hispanics, and African Americans: a systematic review. *Am J Gastroenterol* 2009;**104**:2100-9.
- Molodecky NA, Soon IS, Rabi DM, Ghali WA, Ferris M, Chernoff G, et al. Increasing incidence and prevalence of the inflammatory bowel diseases with time, based on systematic review. *Gastroenterology* 2012;**142**:46-54.
- Satsangi J, Silverberg MS, Vermeire S, Colombel JF. The Montreal classification of inflammatory bowel disease: controversies, consensus and implications. *Gut* 2006;**55**:749-53.
- Malekzadeh R. Ulcerative colitis in southern Iran: a review of 64 cases. *Iran J Med Sci* 1985;**13**:54-9.
- Mir-Madjlessi SH, Forouzandeh B, Ghadimi R. Ulcerative colitis in Iran: a review of 112 cases. *Am J Gastroenterol* 1985;**80**:862-6.

10. Aghazadeh R, Zali MR, Bahari A, Amin K, Ghahghaie F, Firouzi F. Inflammatory bowel disease in Iran: a review of 457 cases. *J Gastroenterol Hepatol* 2005;**20**:1691-5.
11. Malekzadeh R, Varshosaz J, Merat S. Crohn's disease: a review of 140 cases from Iran. *Irn J Med Sci* 2000;**25**:138-43.
12. Vahedi H, Merat S, Momtahan S, Olfati, Olfati G, Kazzazi AS, Tabrizian T, et al. Epidemiologic characteristics of 500 patients with inflammatory bowel disease in Iran studied from 2004 through 2007. *Arch Iran Med* 2009;**12**:454-60.
13. Taghavi SA, Safarpour AR, Hosseini SV, Noroozi H. Epidemiology of Inflammatory Bowel Diseases (IBD) in Iran: A review of 740 patients in Fars province, Southern Iran. *Ann Colorectal Res* 2013;**1**:17-22.
14. Al-Mofarreh MA, Al-Mofleh IA. Emerging inflammatory bowel disease in Saudi outpatients: a report of 693 cases. *Saudi J Gastroenterol* 2013;**19**:16-22.
15. Goh K, Xiao SD. Inflammatory bowel disease: a survey of the epidemiology in Asia. *J Dig Dis* 2009;**10**:1-6.
16. Ahuja V, Tandon RK. Inflammatory bowel disease in the Asia-Pacific area: a comparison with developed countries and regional differences. *J Dig Dis* 2010;**11**:134-47.
17. Sung JJ, Kamm MA, Marteau P. Asian perspectives in the management of inflammatory bowel disease: findings from a recent survey. *J Gastroenterol. Hepatol* 2010;**25**:183-93.
18. Bernstein CN, Wajda A, Svenson LW, MacKenzie A, Koehoorn M, Jackson M, et al. The epidemiology of inflammatory bowel disease in Canada: a population-based study. *Am J Gastroenterol* 2006;**101**:1559-68.
19. Prideaux L, Kamm MA, De Cruz PP, Chan FK, Ng SC. Inflammatory bowel disease in Asia: a systematic review. *J Gastroenterol Hepatol* 2012;**27**:1266-80.
20. Asakura K, Nishiwaki Y, Inoue N, Hibi T, Watanabe M, Takebayashi T. Prevalence of ulcerative colitis and Crohn's disease in Japan. *J Gastroenterol* 2009;**44**:659-65.
21. Yang SK, Yun S, Kim JH, Park JY, Kim HY, Kim YH, et al. Epidemiology of inflammatory bowel disease in the Songpa-Kangdong district, Seoul, Korea, 1986-2005: a KASID study. *Inflamm Bowel Dis* 2008;**14**:542-9.
22. Zahedi MJ, Darvish Moghadam S, Hayat Bakhsh Abbasi M, Dalirsani Z. Demographic and Clinical Features of Ulcerative Colitis Patients in Kerman City during 2005-2007. *J Kerman Univ Med Sci* 2009;**16**:45-53.
23. Darakhshan F, Vali Khojeini E, Balaii H, Naderi N. Epidemiology of Inflammatory Bowel Disease in Iran: A review of 803 cases. *Gastroenterology and Hepatology from Bed to Bench* 2008;**1**:19-24.
24. Leong RW, Lawrance IC, Chow DK, To KF, Lau JY, Wu J, et al. Association of intestinal granulomas with smoking, phenotype, and serology in Chinese patients with Crohn's disease. *Am J Gastroenterol* 2006;**101**:1024-9.
25. Subasinghe D, Nawarathna NM, Samarasekera DN. Disease characteristics of Inflammatory Bowel Disease (IBD): findings from Tertiary Care Centre in South Asia. *J Gastrointest* 2011;**15**:1562-7.
26. Das K, Ghoshal UC, Dhali GK, Benjamin J, Ahuja V, Makharia GK. Crohn's disease in India: a multicenter study from a country where tuberculosis is endemic. *Dig Dis Sci* 2009;**54**:1099-107.