

Crohn's Disease Prevalence and Causes among Saudi Arabia Population

Bayan Musaed AlNooh^{1*}, Mazen Hassan Alaslani², Addi Almaghami³, Mohammed Foad Basehi⁴,
Mohammed Ibrahim Mufti³

¹Intern, King Saud University, Riyadh, Saudi Arabia.

²General Physicians, Center of Primary Care, Ministry of Interior, Riyadh, Saudi Arabia.

³Emergency Department, Alansar General Hospital, Al-Madinah, Saudi Arabia.

⁴King Fahd Central Hospital, Gizan, Saudi Arabia.

ABSTRACT

Background: The Crohn's disease (CD) is a new disease in Saudi Arabia (KSA). Studies have shown that there is little information about the symptoms and the characteristics of the disease in KSA. CD is an Inflammatory Bowel Disorder (IBD) that has no apparent causative agent. The condition is directly influenced by predisposing factors like malfunctioning of the immune systems, genetic problems, and adverse environmental factors.

Objective: This research paper aimed to examine the prevalence and causes of Crohn's disease among Saudi's population.

Methods: The research setting focused on the information from Saudi Arabia's health website. Data was obtained from Riyadh hospital from 2012 to 2017. The research methods involve the review of all IBD cases and diagnosis records stored in the hospital's archives. The research focused on information of children who were younger than eighteen years diagnosed with CD between December 2010 and January 2015.

Results: Out of the 312 patients identified in the study, 120 (60%) were males. However, the prevalence of the disease in Saudi Arabia influenced the researcher to conduct a retrospective study to compare the dynamics of the disease in other countries. The research results showed that out of the 312 patients with the IBD, 197 patients had CD and around

115 had *ulcerative colitis*. The referral rate kept increasing from 2010 to 2015. Many of the patients with the diseases were from the central region of KSA. Research also showed that the 66% of the patients were admitted to the hospital. Approximately 9% of the patients developed colon cancer while six patients died in the hospital. It is, therefore, evident that there is an increase in IBD cases in Saudi Arabia.

Conclusion: The documented data shows that there has been a strikingly increasing trend in the incident rate of CD in Saudi Arabia.

Keywords: Crohn's Disease, Prevalence, Causes, Saudi Arabia.


*Correspondence to:

Dr. Bayan Musaed AlNooh,
Intern, King Saud University, Riyadh, Saudi Arabia.

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INTRODUCTION

CD is an inflammatory condition that affects both the small and large intestines. Research shows that the combination of both genetic, environmental and deficiency of immunoregulatory factors contribute to the increase of the CD cases.¹ Chronic diseases involve an increase in morbidity and frequent exacerbations that contributes to the decrease in the quality of life. *Inflammatory Bowel Disease* (IBD) also causes adverse effects on the digestive system. The development of the CD involves the gastrointestinal tract, and this affects all the layers causing the bowel damage over time. Studies show that the environmental factors have influenced the changing rates of CD in Asia.² The environmental factors contributed to the increase of mortality rates among the patients with high degrees of the disease.³ It has helped the

specialists to detect the disease through more reliable approaches.

The etiology of the inflammation conditions of the diseases remains unknown to the entire Saudi's population. For instance, data shows that the CD conditions with the childhood-onset comprise 25% of the total CD patients. The conditions are more severe in children than in adults. Research indicates that there has been an increase in the CD cases in Asian countries and especially in KSA in the recent past.³ There has been 0.27% increment whereby around 100,000 cases have been reported in teenagers who are less than 14 years of age.³ Data from the Ministry of Health of KSA shows that there has been an increment of Crohn's disease from 2010 to 2015.

The treatment of the CD depends on the extent and the activity of the disease. However, the therapeutic strategies of dealing with the disease involve the surgical extraction of the infected the colon and the rectum. Studies have shown that a more significant number of patients with CD have undergone surgery in KSA.⁴ There are complications associated with CD like, fibrotic stricture, abdominal abscess, and cancer that can only be solved through surgery. However, the surgery cases are few in KSA because the population has little information about the disease and its health implications. The CD cases among the Saudi's society were characterized by lower prevalence and higher penetration rates. The illness proved to have predominance in males than in female patients.³ Therefore, this prospective study identifies the risk factors for the economic and social settings of the Saudi community

PATIENTS AND METHODS

This retrospective study was applicable in reviewing statistical data on Crohn's disease (CD) in Saudi Arabia from January 2010 to December 2015. The research was also meant to study the demographic data, the extent, patterns of CD and their medications.³ Patients with CD were identified using a software hospital system based on the ICD codes of the healthcare facility admissions database. This was done either by endoscopy or by the examination of the personal records of patients.⁵ A collection form for this study was designed and completed in all participating centers, where the forms were taken for the gastroenterologists. The study involved the review of charts and other variables such as the year of presentation of the patient, the period of medication, the presenting symptoms as well as the significant diagnostic findings for CD within the facility. The other vital procedure was the analysis of the data obtained from the CT scans of the abdomen and pelvis, which were used to show clinical findings such as bowel follow through.⁶ The procedure for the diagnosis of the disease was carried out using the Copenhagen diagnostic criteria of the CD. The requirements for this diagnostic measure were based on the history of the symptoms such as abdominal pain, loss in weight and diarrhea that had been experienced for less than three months.⁶ The next stage was the determination of the endoscopic results related to ulceration and the analysis of the radiological features of the specific stricture. The next step was to analyze the histopathologic lesions that were consistent with the disease, where the research sought to find out the effects of patchy inflammation on the epitheloid granuloma. The last analysis of the symptoms involved documentation of the cases of fistula or abscesses as well as the analysis of the segments affected by bowling in the intestines of patients with CD.

To help in the analysis of the effects and incidences of CD, the disease was anatomically classified into three categories, where the first group was small bowel CD. This type of classification was the illness that was limited to the small bowel in cases where it had not spilled over to the cecum. The second rating was that of the colonic in cases where it was limited to the colon of the intestines.⁶

The third classification was that of the ileocolonic in cases where the disease had been depicted to be involved in both the small and large bowel. The primary considerations that were taken into account were that the classification was based on the behavior of the disease, which was either inflammatory, structuring, penetrating or having a mixture of all the responses.

The behavior of inflammatory was defined as being either non-penetrating or non-structuring, which was an uncomplicated condition of inflammation. The structuring condition was where the disease was found to occur in the form of constant luminal narrowing depicted by the obstructive signs but without evidence of penetration.³ The penetrating disease was characterized as a form of bowel perforation, which led to the formation of inflammatory abscesses.

The research focused on the ethical requirements of conducting research. Diseases and patients' information are sensitive issues that need a lot of confidentiality. Therefore, the data collected from the hospital was kept confidential to the researcher. The *Institutional Review Board of the College of Medicine* approved the research and the findings obtained.

Scientific methods were used to analyze the data obtained. The researcher used SPSS software, version 22 to analyze the patient's information obtained from the hospital's primary database. Descriptive data was recorded in the form of percentages of the total data collected. The demographics and clinical data from the research were recorded as medians and means with standard deviations. The cumulative frequency of CD was determined over the five-year period.

RESULTS

Comorbidities and Intestinal Tumor for CD IBD Patients

An IBD positive society was found among 11.1% of the patients, while 18% of the patients were found to have a history of smoking. Associated comorbidities were evident among 32% of the families, while gastrointestinal complications were depicted in 35% of the cases examined. In the each of the admission episode, 66% of the patients required a follow-up.⁵ Colon cancer was found out to have developed in 2.9% of the population examined. One out of 110 cases was found to have undergone IBD-related surgery. The number of deaths from the disease rose at an annual rate of 2%.⁷

Table 1: Incidence rates of CD symptoms

Symptom	Incidence
Pain in the abdomen	0.04
Increase in body temperature	0.003
Loss of weight	0.001
Signs of Perinea	0.001
Strictures	0.001
Bowel obstruction	0.001
Retorted growth	0.003
Ulcers in the Mouth	0.02

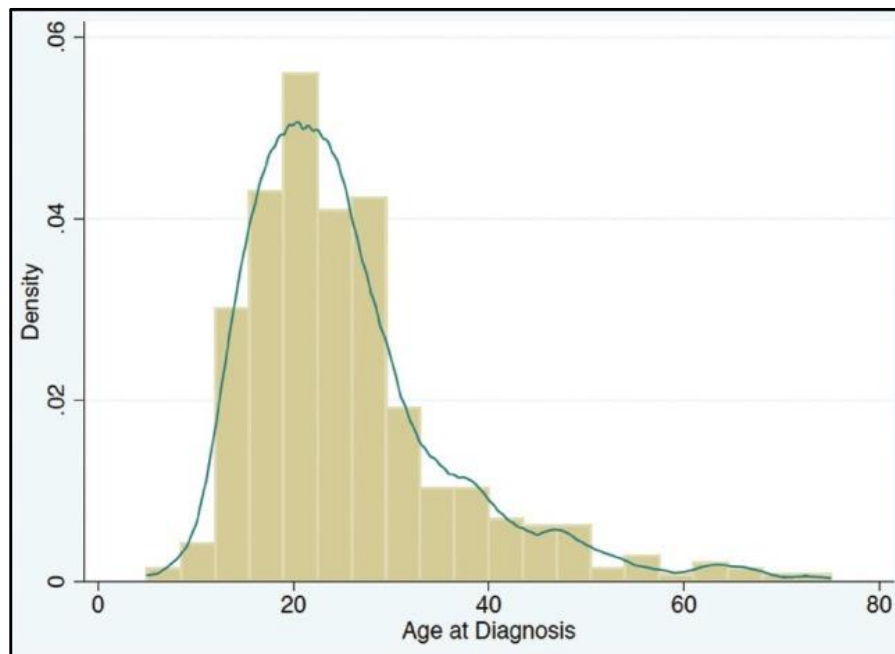


Figure 1: Demographics by age

Demographics of the Disease

The mean age for the disease was found to be 23 years (figure 1). Of these, 68% were males, while 32% were females.

Clinical Presentation

The table 1 shows the incidence rates of the disease among patients examined. The commonest were pain in the abdomen (4%) and ulcers in the mouth (2%).

Behavior of the Disease

The way in which the disease behaved was universal and equal among the behavior characteristics, including the inflammatory type, the fistulizing, and that for structuring despite the fact that the patients experienced mixed behavior of the disease. 42% of the patients were involved in small and large bowels. Consequently, the perianal area was found to be the most common site for fistula.

Treatment

From the data, most of the CD patients in Saudi Arabia have been subjected to 5-ASA preparations, where more than 50% were subjected to steroids, while 45% had received azathioprine in the course of management of the disease. On the other hand, the antitumor necrosis factor was administered in 18% of the patients, while 4% of the patients received adalimumab.⁶ However, there have been questions raised over the efficiency of approximately 5-ASA in the induction of diminution and preservation of the activity of the disease.³ Steroids are known to have a positive impact over a short span of time, but cannot efficiently maintain the therapy for the CD. On the contrary, azathioprine can efficiently to induce and sustain remission as well as prevent postsurgical relapses among patients diagnosed with CD.

DISCUSSION

There were significant findings within the retroactive analysis of the IBD cases from the region. These included an annual increase in CD individuals with IBD, the central region having more cases as compared to the other areas of Saudi Arabia, and CD patients were found to have more cases of perianal disease and strictures.^{6,8} On the other hand, CD patients in Saudi Arabia have

had lengthy periods of hospitalization and more surgeries. There are different implications for these findings. Firstly, the referral incidences for IBD within the past decade are vital in the analysis of the incidence rates of the disease.⁶ Within the last two decades, IBD rate was lower in the Middle East, while it has become a standard disease over the past ten years.⁹ From the data analysis, 56% of the total number of patients resides in the central part of Saudi Arabia. Most of the report shows that there is a close correlation between the socioeconomic status of the people and the prevalence rate of the CD.

Other factors determine the incidence rate of CD, which includes the changes in dietary habits, the rate of development of industries and hygiene, which directly correlate with the prevalence of pathogenesis of IBD.^{3,10} In Saudi Arabia, IBD patients have been found to cluster in urban areas and regions having affluent communities. The urbanized central part is reported to be having the highest incident rates of occurrence of IBD. Consequently, the age demographics may also influence the incidence rate of CD and IBD. In the analysis of the case of Saudi Arabia, the mean age at presentation was 23 years. Compared to other regions such as the Western countries, the median age of introduction of CD in Saudi Arabia is lower. For instance, in countries like the UK, the diagnostic median age is approximately 30 years.

The data identified symptoms for the CD patients, where the dominant traits included abdominal pain, loss of weight and watery stool. The characterization of the phenotypes for the disease among patients was through characterization of bowel capacities, where the colon depicted that the small and large bowel was 34%, while that for the large intestines was 30%. In this case, the dispersal found resembled the report from the West. The other notable finding from the data was that there are higher incidences of penetrating and structuring disorder in approximately 50% of the patients diagnosed with CD.⁶ These results of the percentage increase in the related disorders were also evident in countries such as India and Belgium, while the Perianal region was profoundly affected with the CD when

considering the areas having fistula patients. Even though fistula affects women, the data shows that the incidence rates of CD are more among the Saudi males, representing 68% of the total population diagnosed with the disease.

CONCLUSION

The documented data shows that there has been a strikingly increasing trend in the incident rate of CD in Saudi Arabia. The median age group for the CD patients in the country was 23 years, while it is more prevalent among the male preponderance as compared to the females. The major predisposing factors for infection from CD are environmental factors and the genetic orientation of a person, where the disease is prevalent among first-degree relatives. The central region of Saudi Arabia has the highest incidence of the disease as compared to the other areas, where the geographical orientation is also a contributory factor in the infection of the CD. The data also shows that there is a close correlation between the increase in the IBD incidences and the social, economic status of the residents. Some of the common symptoms include diarrhea, loss of weight and abdominal pain. The best responsive models meant to curb the disease include healthy habits such as improvement in hygiene and change in dietary habits.

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