

Research Letters

Epidemiology of Juvenile-onset Inflammatory Bowel Disease in Central Saudi Arabia

Summary

There is limited information about inflammatory bowel disease in Arab children. Hence, the objective of this study was to report on the epidemiology of this condition in our community. Medical records were analysed for all children below 18 years of age diagnosed with inflammatory bowel disease (IBD) and followed up in our institution over a period of 10 years. From 1993 to 2002, 50 consecutive children were diagnosed to have IBD. This gives an estimated incidence of 0.5 cases/100 000/year and a prevalence of 5 cases/100 000 populations for the region of Riyadh, Saudi Arabia. Most of the children (90 per cent) were Saudi nationals and the female to male ratio was 1:0.6. The age range was between 5 and 18 years with 16 per cent of the cases diagnosed in children below 12 years of age. Chronic ulcerative colitis was the commonest form accounting for 48 per cent, followed by Crohn's disease and indeterminate colitis in 38 per cent and 16 per cent of the children, respectively. The best agreement between colonoscopic and histopathologic findings (89 per cent) was in children with ulcerative colitis followed by normal findings and Crohn's disease in 63 per cent and 35 per cent of the cases, respectively. It was concluded that the incidence and prevalence of IBD in this report are lower than in any other population. Nevertheless, comparison with older data suggests that the incidence is increasing.

Introduction

The term chronic inflammatory bowel disease (IBD) includes three conditions: idiopathic ulcerative colitis (UC), Crohn's disease (CD), and indeterminate colitis. Although the incidence and prevalence of IBD varies from country to country, the pattern of these diseases is strikingly similar. It is well known that IBD is more prevalent in Western populations than in Asians or Africans.¹⁻³ Reports from different Western countries indicate that the incidence is increasing.^{4,6} In the Kingdom of Saudi Arabia, apart from this publication, one case report⁷ and another on pediatric colonoscopy from the same institution,⁸ a search of the literature did not reveal any information on the subject of pediatric IBD. To our knowledge, this is the first report on the

epidemiologic aspects of juvenile-onset IBD from Saudi Arabia.

Materials and Methods

This is a retrospective analysis of the medical records of all children below 18 years of age, diagnosed to have chronic IBD over a 10-year period. Information retrieved included the age at presentation, gender, nationality, and results of colonoscopy, histopathology, and final diagnosis. Clinical notes and colonoscopy and histopathology reports were verified. The final diagnosis was based on the correlation of clinical features with colonoscopic and histopathologic findings. Incidence and prevalence rates were estimated assuming that the region of Riyadh (estimated population = 4 000 000) is the catchment area for the four hospitals where pediatric gastroenterology services are available and that the three other hospitals have a similar number of patients as King Khaled University Hospital (KKUH). Accordingly, the estimated incidence is the estimated total number of children with IBD seen in the four hospitals per 100 000 population/year and the estimated prevalence is the total number of children per 100 000 population. The remainder of the data was analyzed using simple descriptive statistics.

Results

From 1993 to 2002, 50 consecutive children were diagnosed with IBD at KKUH. Accordingly, 200 children with IBD are expected to be managed in the four hospitals of the region of Riyadh over 10 years. This gives an estimated incidence of 0.5 cases/100 000/year and a prevalence of 5/100 000. Most of the children (90 per cent) were Saudi nationals, and the age range was between 5 and 18 years with 16 per cent of the cases diagnosed in children below 12 years of age. The female to male ratio was 1:0.6. Table 1 indicates that chronic ulcerative colitis was the commonest form of IBD, occurring in 24/50 (48 per cent), followed by Crohn's disease in 19/50 (38 per cent). Correlation of colonoscopic with histopathologic diagnoses was possible only in cases where histopathology reports were available. Table 2 summarizes the agreement between colonoscopic and histopathologic findings indicating that the best agreement (89 per cent) was in children with ulcerative colitis followed by normal findings and Crohn's colitis in 63 per cent and 35 per cent of the cases, respectively. In addition, two children with normal colonoscopy had histopathologic findings compatible with Crohn's colitis and 20 children with the histopathologic diagnosis of

chronic non-specific colitis had normal colonoscopy. None of the children with colonoscopic diagnoses of UC, IC had normal histopathology. Finally, a histopathologic diagnosis of chronic non-specific colitis (CNSC) was made in 28/110 (25 per cent) of the children, the majority of whom (71 per cent) had normal colonoscopy.

Discussion

In the Kingdom of Saudi Arabia, the first publication of a case of ulcerative colitis in a child in 1989, followed by a report on pediatric colonoscopy in 1999, provided the first documentation of the occurrence of IBD in Saudi children.^{7,8} Inflammatory bowel disease has also been documented in a neighboring Arab country, reporting 34 cases over a period of 9 years.⁹ In the region of Riyadh, the second most populated region of the Kingdom of Saudi Arabia and the main region in central Saudi Arabia, the estimated incidence and prevalence of IBD in children were 0.5 cases/100 000/year and 5/100 000, respectively. Such figures are far below those reported for south-west Sweden (5.3 and 21.5), Scotland (1.9 and 11.5), and Denmark (4.3 and 15.8),⁴⁻⁶ but slightly higher than the incidence of 0.45/100 000/year reported for the black population of Cape Town, South Africa.² The finding of 50 cases in 10 years compared with 15 cases over 15 years in the previous report from the same institution indicates that IBD occurs more commonly than in

the past. Although, this may be related to increased awareness and better diagnostic means, the change of lifestyle of many Saudi children and adolescents towards more westernized habits and diet, suggests that the incidence of IBD in this region is truly increasing, a trend that is similar to other countries.⁴⁻⁶ The female predominance of IBD is reported in some countries including this study.³ The correlation of colonoscopic to histopathologic findings reveals an agreement on normality and on the diagnosis of CD in only 63 per cent and 35 per cent of the cases, respectively. In addition, the finding that two cases of CD with normal colonoscopy had histopathologic features of CD and that three cases with colonoscopic features of CD having normal histopathology support the recommendation that whenever colonoscopy is performed, biopsies should be sampled even if the mucosa appears normal.^{10,11} The finding of a high number of histopathologic diagnoses of CNSC in children with normal colonoscopy is of questionable significance. When a reviewer blinded to the original report reassessed the colorectal biopsy specimens, inter-observer variability was high, particularly in cases diagnosed as mild inflammation by the original pathologists.¹²

Another study using a previously set histologic criteria for the reporting of colonic biopsies in inflammatory conditions revealed that normal biopsies were found by the blinded reviewer in 37 per cent of the samples labeled as non-specific colitis by the original pathologists.¹³ These patients recovered without clinical intervention. The results of these studies indicate that some pathologists not only tend to over-diagnose the physiological inflammatory infiltrate as evidence of colitis but also under-diagnose specific etiologic types of colitis. Accordingly, unlike the case for many conditions where histopathology provides the diagnosis, the final diagnosis of IBD requires clinical, colonoscopic, and histopathologic correlations.¹⁴ In this report, we have included only cases in which the final diagnosis of IBD was confirmed in the above-mentioned way after a period of clinical follow-up.

TABLE 1
Pattern of IBD in 50 children

	Age (years)		
	0-12	13-18	0-18
	<i>n</i>	<i>n</i>	<i>n</i> (%)
Chronic ulcerative colitis	4	20	24 (48)
Crohn's disease	2	17	19 (38)
Indeterminate colitis	2	5	7 (14)
Total	8 (16)	42 (84)	50 (100)

TABLE 2
Colonoscopic histopathologic correlates of colitis

Colonoscopic diagnosis	Histopathologic diagnosis					Total
	Normal	CNSC	UC	IC	CC	
Normal	38 (63%)	20	0	0	2	60
Ulcerative colitis	0	1	17 (89%)	1	0	19
Indeterminate colitis	0	4	4	3 (21%)	3	14
Crohn's colitis	3	3	0	5	6 (35%)	17
Total	41	28	21	9	11	110

CNSC, chronic non-specific colitis; UC, ulcerative colitis; IC, indeterminate colitis; CC, Crohn's colitis.

We conclude that IBD occurs in children of central Saudi Arabia with a low incidence and prevalence rates similar to Asians and Black Africans, a finding that is not surprising in view of the location of Saudi Arabia in the west of Asia separated from Africa only by the Red Sea. The pattern of these conditions, however, is similar to that found in other countries.

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Serologic Response to Hepatitis B Vaccination in Children with Isolated Anti-HBc

The clinical significance of anti-HBc alone is ambiguous. The prevalence of isolated anti-HBc in various populations has ranged 0.1 per cent to 20 per cent.^{1,2}

Seventeen children with anti-HBc alone were vaccinated with recombinant hepatitis B vaccine given at months 0, 1, and 2, and followed by testing for serological response 1 month after each vaccination. The anti-HBs response of these subjects was compared with that of 17 age-matched seronegative subjects who received the vaccine in the same dose schedule.

A primary response in all cases was observed in 58.8 per cent and an anamnestic response in 35.2 per cent of all cases. Only one case had no antibody response after three vaccinations. In the control group with no anti-HBc marker, the geometric mean anti-HBs titers were significantly

higher than primary responders at 2 and 3 months (81.4 ± 42.4 vs. 52.7 ± 17.5 at 2 months, $p = 0.01$; and 188.2 ± 92.1 vs. 80.4 ± 26.3 at 3 months, $p = 0.00$).

Response rates after vaccination are cited between 56 per cent and 100 per cent.² In Turkey, Sunbul, *et al.*³ found an anamnestic response in 42.5 per cent and a primary response in 48.4 per cent of those cases. In a study on the effect of hepatitis B vaccine in subjects with an isolated anti-HBc, 56 per cent developed a primary anti-HBs and 16 per cent an anamnestic response.⁴ Silva, *et al.*⁵ reported a primary response rate of 80 per cent. According to our findings, the overall primary anti-HBs response rate in cases with an isolated anti-HBc may be as high as 59 per cent.

In conclusion, cases with isolated anti-HBc should be included in hepatitis B vaccination programs.

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