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Colonic Involvement in Collagen Diseases

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Abstract

The present study was carried out on 29 patients with collagen diseases including 16 with rheumatoid arthritis, 8 patients with systemic lupus erythematosus and 5 patients with systemic sclerosis. Colonoscopic examination showed that abnormal findings were detected in 9 patients (31%); one with rheumatoid arthritis, 5 with S. L. E. and 3 with systemic sclerosis. Diverticulosis and polyps were only seen in systemic sclerosis whereas hyperemia and erosion of the colonic mucosa predominated in S. L. E. On histopathological examination of mucosal specimens, it was apparent that stromal edema was most marked in patients with S. L. E. (occurred in 6 cases). The same was true for basement membrane thickening which was observed in 2 cases. On the other hand, vessel congestion was most marked in systemic sclerosis. Vasculitis was observed in two cases; one with S. L. E. and the other with rheumatoid arthritis. Stromal hemorrhage occurred in 2 cases with systemic sclerosis, one case with S. L. E. and 4 cases with rheumatoid arthritis. Results of the present study showed that rheumatoid factor was detected in 6 out of the 10 cases with vessel congestion, the anti-DNA was detected in 4 cases and antinuclear antibody was detected in only 2 cases. Stromal hemorrhage was related more to the antinuclear antibody and stromal edema was related more to rheumatoid factor and anti-DNA antibody.

In conclusion, collagen diseases seem to have more widespread histopathological abnormalities that could be suggested by gastrointestinal clinical manifestations or the colonoscopic appearance. Possibly, these abnormalities are related to the type of circulating antibody or the antigen antibody complex deposited in the colonic mucosa.

Introduction

COLLAGEN diseases include wide varieties of syndromes with potential affection of practically any system of the body. Upper gastrointestinal involvement was previously reported by several workers [1, 3].

Only a few works described the colonic changes in collagen diseases. The incidence and degree of these changes were not fully documented. The aim of the present work is to study the endoscopic and histopathological changes of the colon in patients with collagen diseases and to try to correlate these changes with the severity and type of collagen disorder.

Material and Methods

The present study was carried out on 29 patients with collagen diseases. They included 16 patients with rheumatoid arthritis (9 females and 7 males). 8 female patients with systemic lupus erythematosus and 5 female patients with systemic sclerosis. The age of patients with R. A. ranged between 17 and 50 years with a mean value of 31 years ± 11.2 (mean ± S.D.). Patients with S. L. E had an age which ranged between 12 and 50 years with a mean of 26.4 ± 11.6 (mean ± S. D.). The age of patients with systemic sclerosis ranged between 25 and 48 years with a mean of 38.6 ± 9.0 years (mean ± S. D.). The mean duration of the disease was 31.2 m., 22.5 m. and 17.4 for patients with R. A., S. L. E. and systemic sclerosis respectively. Patients included in the present study were subjected to the following:

1. Full clinical evaluation.

2. Laboratory investigations including: Blood picture, E. S.R., urine examination, renal function tests and immunological tests for detection of antibodies including: rheumatoid factor, antinuclear antibody and antidouble-stranded DNA antibodies.

3. Colonoscopy and histopathological examination of multiple biopsy specimens taken from different sites of colonic mucosa.

Results

Results are shown in tables (1-2) and Figs. (1-4). Table (1) shows that 10 out of the 29 patients with collagen diseases had gastro-intestinal symptoms. They were found to be distributed as follow: Four cases out of the five patients with systemic sclerosis (80%), three out of the eight patients with S. L. E. (37.5%) and three out of the sixteen patients rheumatoid arthritis (18.7%).

Results showed also that rheumatoid factor was positive in 11 cases with rheumatoid arthritis (68.7%), in 3 cases with S. L. E. (62.5%) and in 2 cases with systemic sclerosis (40%). The antinuclear antibody was positive in only one patient with rheumatoid arthritis (6.2%), in 4 cases with S. L. E. (50%) and in 5 cases with systemic sclerosis (100%). Anti DNA antibody was positive in only one case with

Table (1): Clinical, Colonoscopic and Histopathological Findings in the Group of Patients Studied.

	R. Arthritis	S.L.E.	S. Sclerosis
Total	16 (55.2%)	8 (27.6%)	5 (17.3%)
Age (yrs):			
Range	17-50	12-50	25-48
Average	31	26.4	38.6
S.D.	± 11.25	± 11.6	± 9.07
Sex:			
Males	7	-	-
Females	9	8	5
Duration of Disease:			
Range (months)	3- 9	1- 60	12- 36
Average	31.7	22.5	17.4
Gastrointestinal Symptoms	3 (18.7%)	3 (37.5%)	4 (80%)
Colonoscopic Findings			
N.A.D.	15 (93.8%)	5 (62.5%)	3 (60%)
Hyperemia	1	4	-
Mucosal erosion	-	1	-
Diverticulosis	-	-	2
Polyps	-	-	1
Histopathological Findings:			
Stromal edema	3 (18.75%)	6 (75%)	3 (60%)
Basement membrane thickening	1 (6.25%)	2 (25%)	1 (20%)
Vessel congestion	5 (31.25%)	1 (12.5%)	4 (80%)
Vasculitis	1 (6.25%)	1 (12.5%)	-
Stromal hemorrhage	4 (25%)	1 (12.5%)	2 (40%)
Stromal cell eosinphil	1 (6.25%)	1 (12.5%)	-
Stromal cell plasma cell	2 (12.25%)	5 (2.5%)	-
Stromal cell histiocyte	2 (12.25%)	1 (12.5%)	-
Stromal cell lymphocyte	1 (6.25%)	2 (25%)	1 (20%)

rheumatoid arthritis (6.2%) and in all patients with S. L. E. and systemic sclerosis.

Table (2): Incidence of Some Histopathological Changes in Patients with Positive Immunological Tests.

	A.N.A.	Anti-DNA	R.F.
Vessel congestion	2/10	4/10	6/10
Vessel dilatation	4/8	3/8	-
Stromal hemorrhage	5/7	3/7	1/7
Stromal edema	4/12	7/12	6/12

Colonoscopic examination of patients included in the present study showed that abnormal findings were detected in 9 patients (31%). One with rheumatoid arthritis, 5 with S. L. E. and 3 with systemic sclerosis showed abnormal findings on colonoscopic examination. Diverticulosis and polyps were only seen in systemic sclerosis whereas hyperemia and erosion of the colonic mucosa predominated in patients with systemic lupus erythematosus.

On histopathological examination of colonic mucosal specimens, results of the present study showed that a wide range of abnormalities existed in patients with collagen diseases (Table 1). The incidence of such abnormalities differed according to the disease entity. Stromal edema occurred in 75% of patients with S. L. E., in 60% of patients with systemic sclerosis and in 18.75% of patients with rheumatoid arthritis. The same was also true regarding basement membrane thickening which was detected in 25%, 20% and 6.25% in patients with S. L. E. patients with systemic sclerosis and patients with rheumatoid arthritis respectively. On the other hand, vessel congestion was prominent in systemic sclerosis (80%) followed by rheumatoid arthritis (31.25%) and was least in S. L. E. (12.5%). Only two cases of vasculitis were detected in the mucosal specimens studied. One in a patient with S. L. E. and the other in a patient with rheumatoid arthritis. Stromal hemorrhage was related more to systemic sclerosis (40%) than to rheumatoid arthritis (25%) and was least in S. L. E. (12.5%).

An attempt was made to relate the histopathological abnormalities to the type of collagen disease. As shown in table (2), rheumatoid factor was detected in 6 out of the 10 cases with vessel congestion (60%), the anti-DNA was detected in 4 cases and the antinuclear antibodies were detected in only two cases. On the other hand, the antinuclear antibodies were more prominent in patients having vessel dilatation (50%) than the anti-DNA antibodies which were present in 37.5% of such cases. Stromal hemorrhage was related more to antinuclear antibodies and stromal edema was related more to anti DNA and rheumatoid factor.

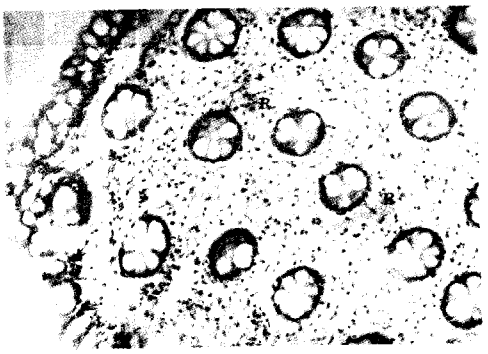

Fig. (1): Colonic biopsy from a patient with S. L. E revealing submucosal oedema with focal extravasation of R.B.Cs and a moderate lymphoplasmacystic infiltrate (H & E X 250). Endoscopic finding: Hyperaemic patches.

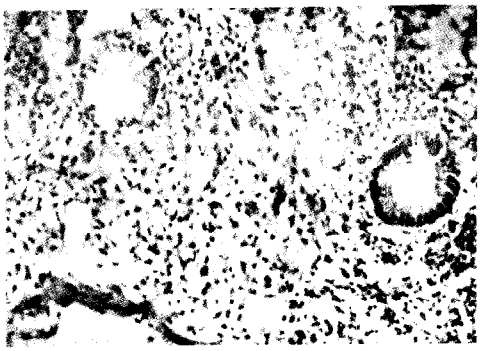

Fig. (2): A colonic biopsy from a patient with S. L. E. revealing a heavy submucosal chronic inflammatory cell infiltrate. One of the blood vessels is lined with prominent swollen endothelial cells (v) (H & E x 400). No abnormality was detected by colonoscopy.

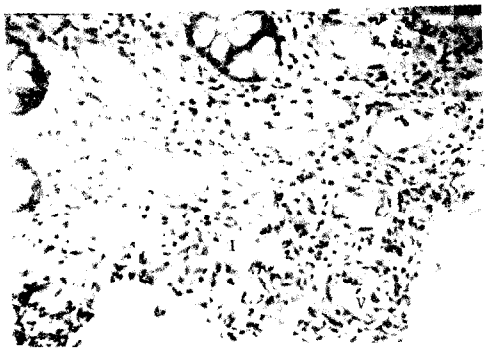

Fig. (3): A colonic biopsy from a patient with S. L. E. revealing numerous dilated vascular spaces, some of them have a degenerated wall (I) One of the blood vessels is infiltrated by inflammatory cells (V). Endoscopic finding: Hyperaemic patches.

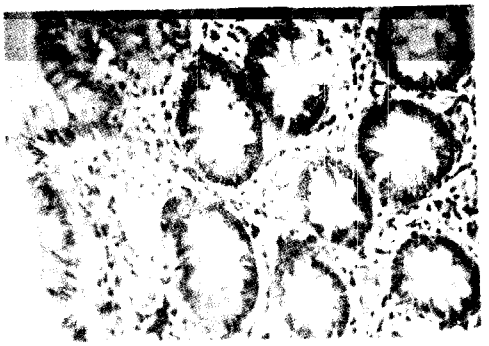

Fig. (4): A colonic biopsy from a patient with rheumatoid arthritis revealing numerous congested submucosal blood vessels (H & E).

Discussion

Gastro-intestinal symptoms in collagen disease have long been noticed by several workers. Some of them related these symptoms to the effects of the drugs used in the treatment of such diseases [4]. On the other hand, other workers claimed that vasculitis, an associated pathology of many of the known collagen disorders, might be implicated [5].

Results of the present study demonstrated that 34.4% of the studied patients had gastro-intestinal symptoms. This high incidence may indicate that the disease itself may be responsible, at least in part, for the gastrointestinal manifestations present. In fact a higher incidence of involvement of the colon was demonstrated by histopathological examination even in cases that were free of symptoms.

Collagen diseases are famous of being associated with different types of antibodies. Some of them e. g. A.N.A. and anti-DNA may react against the nuclear material of any type of cell. There is no evidence that the colonic mucosal cells should be immune to this reaction. Moreover, ischemic damage caused by a vasculitic process has been previously reported [5] to cause pancolitis and intestinal gangrene in cases with rheumatoid arthritis. In 1981, Scott and Tribe [6] demonstrated necrotizing arteritis of small arteries indistinguishable from polyarteritis nodosa in rectal biopsies obtained from patients with rheumatoid arthritis. Some of the works that describe vasculitis in colonic biopsies from patients with rheumatoid arthritis emphasize that they are usually associated with manifestations of systemic vasculitis, occur in patients who have prolonged disease and are associated with higher incidence of nodules and hypertension. However, patient with rheumatoid arthritis with vasculitis, included in the present study, was free of clinical evidence of systemic vasculitis, had no gastrointestinal symptoms and colonoscopic examination showed that there was no abnormal finding. In contrast, patient with S. L. E. and pathological evidence of vasculitis in the colon, was found to have advanced and prolonged disease, severe gastrointestinal symptoms, markedly elevated ESR, proteinuria and hypertension. However, there were no changes on colonoscopy.

Results of the present study showed that the abnormalities seen on histopathological examination were found to have a more or less selective distribution. Stromal edema and basement membrane thickening were found more in patients with S. L. E. while stromal hemorrhage and congestion were found more in systemic sclerosis. Furthermore, these changes appear to be related to the type of antibody present in the serum regardless of the clinical syndrome. It is possible that the pathological abnormalities present in the colon in patients with collagen diseases depend upon the type of the antigen antibody complex deposited in the colon.

In conclusion, collagen diseases seem to have more widespread pathological abnormalities than that could be suggested by symptoms or colonoscopy. It is possible that these abnormalities are related to the type of circulating antibody or the antigen antibody reaction and deposition in the colonic mucosa rather than to the drugs used in the treatment of such diseases. Colonoscopy and pathological examination of mucosal specimens should be a part of the routine evaluation of these patients.

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