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ORIGINAL ARTICLE PEDIATRICS

Gastrointestinal endoscopic findings of autoimmune and autoinflammatory diseases in pediatric rheumatology patients

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ABSTRACT

OBJECTIVE: Rheumatic diseases in children are chronic and multisystemic diseases. In this study, it was aimed to evaluate gastrointestinal endoscopic findings in children diagnosed as autoimmune or autoinflammatory rheumatic diseases consulted with pediatric gastroenterology for gastrointestinal complaints.

METHODS: The patients followed up by the Pediatric Rheumatology Department and consulted to the Pediatric Gastroenterology Department due to gastrointestinal complaints were included in the study. File records of the patients were analyzed retrospectively.

RESULTS: A total of 28 patients were included in the study. Twelve of the patients had autoimmune disease (Juvenile idiopathic arthritis [JIA], systemic lupus erythematosus, Sjögren's syndrome, and scleroderma) and the other 16 had autoinflammatory disease (familial Mediterrnean fever, hyper Immunoglobulin D syndrome, undifferantiated systemic autoinflammatory disease, and systemic JIA). Four of the patients with familial Mediterrnean fever also diagnosed as JIA. The mean age of the patients was 11.7±3.5 years. The main gastrointestinal complaints of patients with both autoimmune and autoinflammatory diseases were abdominal pain and diarrhea. Inflammatory bowel disease was found in 33% of those with autoimmune disease and 56% of those with autoinflammatory disease in patients underwent endoscopic evaluation. M694V mutation was present in 62% of the patients with autoinflammatory disease presented with gastrointestinal complaints.

CONCLUSION: Both autoimmune and autoinflammatory rheumatic diseases can cause gastrointestinal complaints and should be referred to a pediatric gastroenterologist for early diagnosis.

Keywords: Autoimmune; autoinflammatory; inflammatory bowel disease; pediatric; rheumatic.

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Rheumatic diseases in children are multisystemic diseases that are characterized by acute and chronic inflammation. Autoimmune diseases occur when self-tolerance is lost and the body's normal tissues are attacked by the immune system. Dysregulation in the adaptive immune system is responsible for the pathogenesis of autoimmune diseases. The presence of autoantibodies, mainly antinuclear antibodies, may be a clue for an underlying rheumatic disease. Juvenile idiopathic arthritis (JIA) cases constitute the majority of pediatric rheumatology patients who frequently present with persistent arthritis. However, autoimmune diseases such as systemic lupus erythematosus (SLE), scleroderma, and Sjögren's syndrome are also seen in childhood [1].

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Autoinflammatory diseases are a rare group of genetic diseases that start with symptoms in childhood and cause inflammation in many tissues. Autoinflammation occurs due to changes in innate immunity. In autoinflammatory diseases, unlike autoimmune diseases, symptoms are in the form of attacks; however, high titer autoantibody formation is not observed. Monocyte-macrophage is fundamental in the pathogenesis of autoinflammatory diseases, and there is a dysregulation of cytokines that play a role in causing inflammation in which innate immunity is active [2]. In most autoinflammatory diseases, pathophysiological events occur due to excessive activation of IL-1β. The most common autoinflammatory disease in Turkiye is familial mediterranean fever (FMF) [3]. Both autoimmune and autoinflammatory diseases cause systemic effects. One of the affected systems is the gastrointestinal system. Non-specific gastrointestinal symptoms such as abdominal pain, dyspepsia, nausea, and diarrhea are present in rheumatic diseases, and these symptoms are mostly insidious, which makes the diagnosis difficult [4]. Persistence of gastroenterological findings of severity that are incompatible with the existing rheumatic disease requires endoscopic evaluation. Gastrointestinal endoscopy and histopathological evaluation can clearly distinguish the diseases of the digestive system. This study aims to evaluate the results of gastrointestinal endoscopy and histopathology in pediatric patients with autoimmune and autoinflammatory diseases followed by the Department of Pediatric Rheumatology.

Highlight key points

- Autoimmune and autoinflammatory rheumatic diseases may cause different gastrointestinal manifestations by immune dysregulation.
- In rheumatic diseases, the gastrointestinal system should be questioned in every patient.
- Anti-neutrophil cytoplasmic antibodies and anti-saccharomyces cerevisiae antibodies screening should be performed in these patients, since patients with FMF and JIA are prone to inflammatory bowel disease.
- Pediatric rheumatology department should work in close cooperation with pediatric gastroenterology department.

MATERIALS AND METHODS

Pediatric patients with autoimmune or autoinflammatory disease who were followed up in Erciyes University Faculty of Medicine, Department of Pediatric Rheumatology, and who were consulted at the Pediatric Gastroenterology Department due to gastrointestinal complaints, such as abdominal pain, diarrhea, and weight loss, that persisted despite treatment of rheumatic disease and underwent upper and/or lower gastrointestinal endoscopy were retrospectively analyzed.

This study was approved by the Erciyes University Faculty of Medicine Ethics Committee (decision no: 2020/447, date: September 09, 2020). Informed consent was obtained from the parents of the patients.

The patients were divided into two groups: (1) Those with autoimmune diseases such as JIA, SLE, scleroderma, and Sjögren's syndrome, and (2) those with autoinflammatory diseases such as FMF and periodic fever syndromes. Patients' age, gender, rheumatic disease, gastrointestinal complaints, upper and/or lower gastrointestinal endoscopy and histopathology results, anti-Saccaromyces cerevisiae antibodies (ASCA, more common in Crohn's disease), and perinuclear anti-neutrophil cytoplasm antibodies (p-ANCA, more common in ulcerative colitis) were obtained from the file records.

The patients were diagnosed with JIA according to the international league of associations for rheumatology classification criteria [5]. The diagnosis of SLE was made according to the updated classification criteria of the American College of Rheumatology [6]. The diagnosis of Sjögrens syndrome was made according to the American College of Rheumatology/European League against Rheumatism classification criteria for primary Sjögren's syndrome [7]. The diagnosis of scleroderma was made according to the Pediatric Rheumatology Society/American College of Rheumatology/European League against Rheumatism provisional classification criteria for juvenile systemic sclerosis [8]. The diagnosis of autoinflammatory diseases was made according to the Eurofever study group criteria [9]. FMF diagnosis was made according to the Yalçınkaya-Özen Turkish children criteria [10].

Before performing upper and/or lower gastrointestinal endoscopy, informed consent forms were obtained from the patients' parents for endoscopy. The endoscopy procedure was performed using sedation analgesia after 8-h fasting. Upper gastrointestinal endoscopy was performed using Fujinon 4400-HD-EG530FP, and colonoscopy was performed using the Fujinon 4400-HD-EC530LP model endoscopy system (Fujinon Corporation, Japan). Biopsies were taken for histopathological examination during upper and lower gastrointestinal endoscopies. Histopathology results of the patients were recorded.

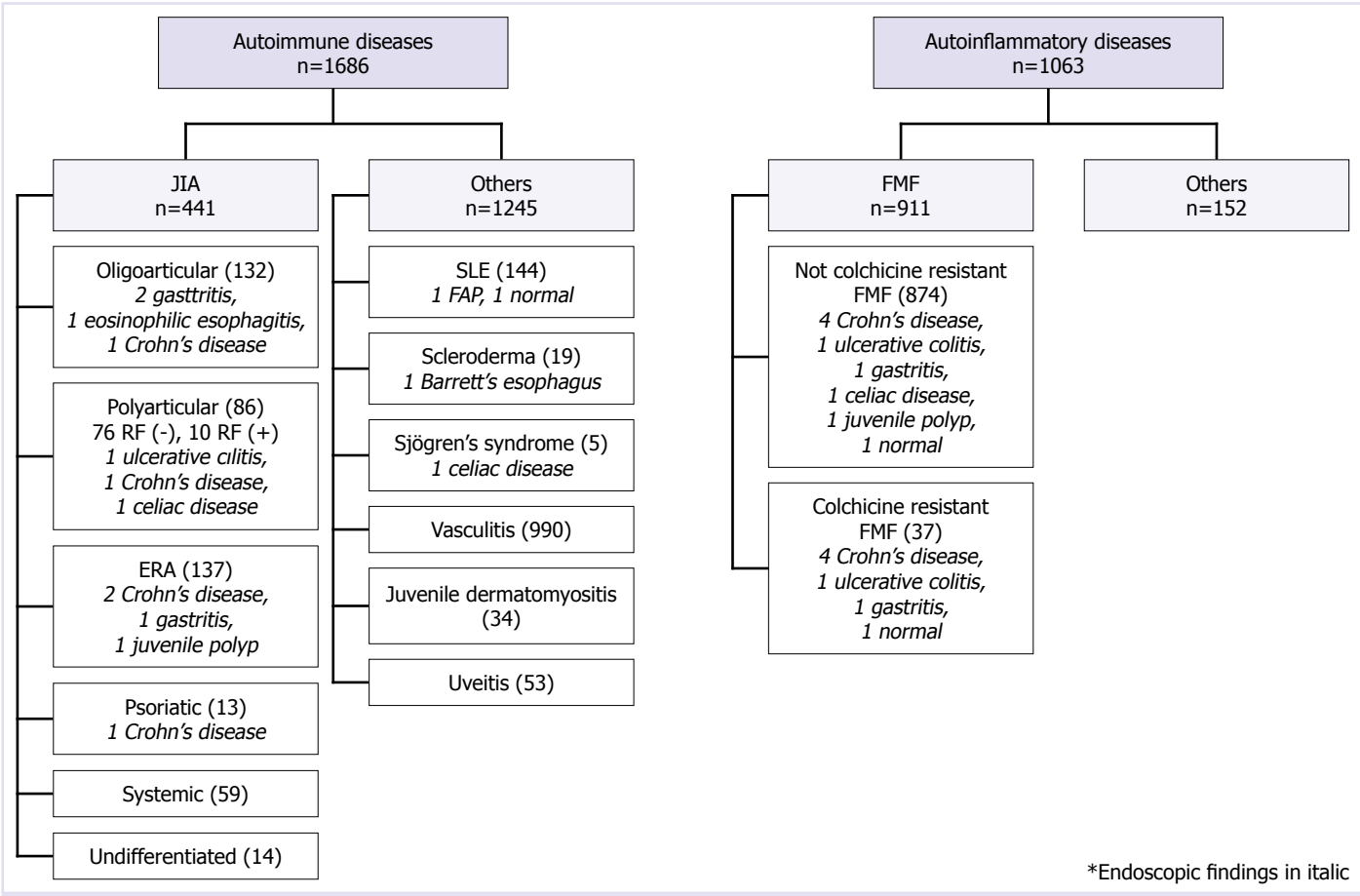

FIGURE 1. Flow-chart of the patients with rheumatic diseases underwent endoscopy.

Gastrointestinal disease diagnoses of the patients were made according to the results of histopathological evaluation. The updated Sydney system was used for the diagnosis of gastritis [11]; reflux esophagitis was evaluated by the presence of eosinophils, papillary lengthening, and/or basal cell hyperplasia [12]. The typical endoscopic findings for eosinophilic esophagitis were loss of vascularity in the esophagus, linear furrows, trachealization, narrowing of the lumen, exudation, and/or ulceration with more than 15 eosinophils per high-power field [13]. The Marsh scoring system was used for celiac disease [14]. The diagnosis of inflammatory bowel disease was made according to the ESPGHAN diagnostic criteria [15].

Statistical Analysis

Data were evaluated via SPSS v. 22.0 using the descriptive statistical method. Parametric statistics were presented as the mean±standard deviation, and non-parametric statistics were expressed as the median (minimum–maximum). Descriptive data were presented as frequencies and percentages.

RESULTS

A total of 1686 patients with autoimmune diseases and 1063 patients with autoinflammatory diseases were followed up by the Pediatric Rheumatology Department, Erciyes University Faculty of Medicine (Fig. 1). A total of 28 patients (18 female and 10 male) among these patients who consulted with the pediatric gastroenterology department and underwent endoscopy due to ongoing gastrointestinal complaints inconsistent with the treatment of rheumatic disease were included in the study. Twelve of these patients had autoimmune disease (JIA, SLE, Sjögren's syndrome, or scleroderma). Sixteen of them had autoinflammatory disease (FMF, hyperimmunoglobulin D syndrome [HIDS], undefined systemic autoinflammatory disease, or systemic JIA). Four patients with FMF also had JIA. The mean age of all patients was 11.7±3.5 years (5–17 years). The mean age of the patients with autoimmune disease was 12.0±3.8 years, and the mean age of the patients with autoinflammatory disease was 11.4±3.5 years. Abdominal pain and diarrhea

constituted the majority of gastrointestinal complaints of patients with autoimmune diseases. One patient with weight loss had granuloma formation on histopathological specimens and was diagnosed with Crohn's disease. Inflammatory bowel disease was detected in four (33%) patients with autoimmune disease. Three were diagnosed with Crohn's disease, one with ulcerative colitis, three with gastritis, one with eosinophilic esophagitis, one with celiac disease, and one with Barrett's esophagus. A patient with SLE was also diagnosed with neurofibromatosis Type 1, MSH6 mutation, and FMF, and this patient was evaluated for colon cancer because the MSH6 mutation and colonoscopy of the patient were normal. CARMIL2 deficiency was detected in a patient with psoriatic arthritis; he was diagnosed with Crohn's disease. The patient's gastrointestinal complaint started when he was 6 years old, but the diagnosis of Crohn's disease was made at the age of 14. Table 1 shows the gastrointestinal findings of patients with autoimmune disease.

In our study, most patients with autoinflammatory disease had a diagnosis of FMF. The main gastrointestinal complaints of the cases were abdominal pain and diarrhea. Inflammatory bowel disease was detected in nine (56%) of the cases (Crohn's disease in seven, ulcerative colitis in two) with autoinflammatory disease. Inflammatory bowel disease was found in seven of the 911 FMF cases (0.7%). Gastritis was detected in three cases, celiac disease in one case, and juvenile polyps in the rectum in one case. The histopathology of one patient with dyspeptic complaints and that of the other case with diarrhea were normal. Of the four patients with FMF and JIA, two had Crohn's disease, one had celiac disease, and one had juvenile polyps. Inflammatory bowel disease was detected in 13 patients (46%) in both groups. Antibody (ASCA and/or p-ANCA) screening was performed in 10 of these patients, and it was found positive in four (40%) of them. M694V mutation was present in 10 of the 16 (62%) patients with autoinflammatory disease who presented with gastrointestinal complaints. Table 2 shows the gastrointestinal findings of patients with autoinflammatory disease.

DISCUSSION

Gastrointestinal findings of pediatric patients with autoimmune and autoinflammatory diseases were evaluated in the study. Abdominal pain and diarrhea constitute the most common indications for endoscopic evaluation in children with JIA and FMF [16, 17]. In the present study, the main gastrointestinal complaints of patients with both autoimmune and autoinflammatory diseases were abdominal pain and diarrhea persisting during the treatment of rheumatic disease. Approximately one-third of the patients with autoimmune disease and half of the patients with autoinflammatory disease consulted with the pediatric gastroenterology department, underwent endoscopic evaluation, and were diagnosed with inflammatory bowel disease.

It is known that the incidence of inflammatory bowel disease is higher in patients with JIA compared with the normal population. However, studies on pediatric patients are limited. The relationship between the increase in inflammatory cytokines and inflammatory bowel disease in JIA has been investigated [18, 19]. Maller et al. [18] stated that inflammatory bowel disease is rarely seen at the beginning of JIA and that patients should be evaluated in terms of inflammatory bowel disease when gastrointestinal findings are observed. Pichler et al. [16] reported that abdominal pain and diarrhea were the most common endoscopy indications in children with JIA and mild non-specific inflammation in the colon was mostly seen histopathologically. In the same study, they mentioned that approximately 30% of children with JIA have eosinophilic intestinal mucosal inflammation. Although the mechanism of eosinophilic inflammation is not fully known, it has been stated that food allergy and allergy to non-steroidal anti-inflammatory drugs may be responsible. In this study, a patient with JIA complaining of abdominal pain was histopathologically diagnosed with eosinophilic esophagitis, presenting typical endoscopic findings, such as furrowing and trachealization. Pichler et al. [16] stated that there is no association between JIA subtypes and intestinal inflammation. In the present study, most patients with JIA belonged to the oligoarticular subtype, and a comparison could not be made between the subtypes due to the low number of cases.

CARMIL2 deficiency presenting with early onset inflammatory bowel disease was found in one of the patients with psoriatic arthritis. The patient had abdominal pain and diarrhea with mucus that started when she was 6-years-old. The patient was diagnosed with Crohn's disease through a colonoscopic examination performed at the age of 14, and whole exome sequencing revealed CARMIL2 deficiency [20]. CARMIL2 is an essential protein for the development of regulatory T cells, and its deficiency causes primary immunodeficiency [21]. Our case had a rare condition in which CARMIL2 deficiency and psoriatic arthritis were seen together and Crohn's disease was diagnosed.

Table 1. Demographic data and gastrointestinal findings of the patients with autoimmune diseases

Pat.	Gen.	Age (years)	RD	Age of RD	Additional disease	GI complaints	UGI endoscopy	Colonoscopy	Histopathology of UGI	Histopathology of colonoscopy	GI diagnosis	pANCA/ ASCA
1	F	16	SLE	15		Bloody stool	Gastric hyperemia, nodularity	Milimetric polyps	Chronic gastritis	Inflammatory polyps	Familial polyposis coli (FAP)	Negative
2	M	5	Sjögren's syndrome	4		Diarrhea	Duodenal irregularity	NP	Celiac disease	NP	Celiac disease	NP
3	F	5	Polyarticular JIA	1.5	IgA deficiency	Abdominal pain, diarrhea	Gastric hyperemia	Superficial ulcers	Normal	Focal active colitis	Ulcerative colitis	Negative
4	F	15	JIA (ERA)	11		Abdominal pain	Gastric hyperemia	NP	Chronic gastritis	NP	Chronic gastritis	NP
5	F	13	JIA-psoriatic artrit, CARMIL2 mutation	13		Abdominal pain, diarrhea	Esophagitis, gastric hyperemia	Hyperemia in the colon	Active esophagitis, chronic gastritis, Hp (+)	Focal active colitis	Crohn's disease	ASCA+
6	F	12	SLE, NF-1, MSH6 mutation	8	FMF (MEFV negative)	None	Normal	Normal	NP	NP	Normal	NP
7	F	16	Oligoarticular JIA	11		Abdominal pain	Antral hyperemia	NP	Superficial gastritis	NP	Gastritis	NP
8	M	13	Oligoarticular JIA	10		Abdominal pain	Esophageal linear furrows, gastric erosion	NP	Eosinophilic esophagitis	NP	Eosinophilic esophagitis	NP
9	F	16	Oligoarticular JIA	13		Abdominal pain	Antral nodularity	NP	Chronic gastritis, Hp(+)	NP	Chronic gastritis	NP
10	M	12	Scleroderma	7		Abdominal pain	Esophageal hyperemia	NP	Barrett's esophagus	NP	Barrett's esophagus	NP
11	M	12	Oligoarticular JIA	11		Elevated APR, positive FOBT	Gastric hyperemia	Ulcers in the terminal ileum	Mildly active esophagitis	Active ileitis, focal active colitis	Crohn's disease	ASCA+
12	M	10	Polyarticular JIA	10		Abdominal pain, weight loss	Esophagitis, gastric hyperemia	Granulation tissue in the colon	Superficial gastritis	Severe active colitis, granulation	Crohn's disease	Negative

Pat.: Patients; Gen.: Gender; F: Female; M: Male; RD: Rheumatic disease; GI: Gastrointestinal; UGI: Upper gastrointestinal; APR: Acute phase reactants; ERA: Enthesitis-related arthritis; FOBT: Fecal occult blood test; Hp: *Helicobacter pylori*; NF: Neurofibromatosis; NP: Not performed; ASCA: Anti-saccaromyces cerevisiae antibodies; pANCA: Perinuclear anti-neutrophil cytoplasm antibodies.

TABLE 2. Demographic data and gastrointestinal findings of the patients with autoinflammatory diseases

Pat.	Gen.	Age (years)	RD	Age of RD	Additional disease	MEFV mutation	GI complaints	UGI endoscopy	Colonoscopy	Histopathology of UGI	Histopathology of colonoscopy	GI diagnosis	pANCA/ ASCA
1	M	11	FMF	10	JIA (ERA)	E148Qhet	Abdominal pain, weight loss	Aphthous lesions in the antrum	Hyperemia in the colon, exudation in the terminal ileum	Reflux esophagitis, erosive gastritis, Hp(+)	Active ileitis, focal active colitis	Crohn's disease	Negative
2	F	9	FMF	1	Colchicine resistant FMF	M694Vhom	Diarrhea	Antral hyperemia	Rectal hyperemia	Superficial gastritis	Normal	Gastritis	Negative
3	F	16	FMF	3	Colchicine resistant FMF	M694Vhom	Dyspepsia	Normal	NP	Normal	NP	Normal	NP
4	F	14	FMF	11		M694V/ M680I	Abdominal pain, weight loss, diarrhea	Gastric hyperemia	Hyperemia in the colon	Chronic gastritis	Diffuse active colitis	Ulcerative colitis	Negative
5	F	12	FMF	5		M694Vhom	Failure-to-thrive	Normal	NP	Chronic gastritis	NP	Chronic gastritis	NP
6	M	17	FMF	17		V726Ahet	Diarrhea	Gastric hyperemia	Normal	Normal	Normal	Normal	Negative
7	F	12	HIDS	5		C481Thet	Abdominal pain	Gastric hyperemia	NP	Superficial gastritis	NP	Gastritis	NP
8	M	7	FMF	5		M694Vhom	Abdominal pain	NP	Normal	NP	Focal active colitis	Crohn's disease	NP
9	F	7	FMF	5	CRMO	M694Vhom	Abdominal pain	Antral hyperemia	Ulcers in the colon	Superficial gastritis	Diffuse active colitis	Crohn's disease	NP
10	F	11	FMF	2	JIA (ERA)	M694V/ M680I	Abdominal pain, diarrhea	NP	Lymphoid hyperplasia	NP	Diffuse active colitis	Crohn's disease	Negative
11	M	14	FMF	3	Colchicine resistant FMF	M694Vhom	Abdominal pain	Normal	Ulcers in the terminal ileum	Normal	Diffuse active colitis	Crohn's disease	ASCA +
12	F	10	FMF	2.5	Colchicine resistant FMF	M694Vhom	Abdominal pain	Normal	Normal	Chronic gastritis	Diffuse active colitis	Ulcerative colitis	NP
13	F	16	FMF	6	JIA (ERA)	R717H het	Diarrhea	Normal	Rectal polyp	Normal	Juvenile polyp	Juvenile polyp	Negative
14	F	14	FMF	13	Poly-articular JIA	M694Vhom	Diarrhea	Duodenal irregularity	NP	Celiac disease	NP	Celiac disease	Negative
15	M	6	uSAID	5		No mutation detected	Abdominal pain	Antral hyperemia	Normal	Superficial gastritis	Diffuse active colitis	Crohn's disease	ASCA +
16	F	7	Systemic JIA	6	Leishmaniasis	NP	Abdominal pain, diarrhea	Gastric hyperemia	Hyperemia in the colon	Reactive gastropathy	Diffuse active colitis	Crohn's disease	Negative

Pat.: Patients; Gen.: Gender; F: Female; M: Male; RD: Rheumatic disease; Hp: *Helicobacter pylori*, CRMO: Chronic recurrent multifocal osteomyelitis; ERA: Enthesitis-related arthritis; HIDS: Hyperimmunoglobulin D syndrome; uSAID: Undefined systemic autoinflammatory disease; hom: Homozygous; het: Heterozygous; NP: Not performed; ASCA: Anti-saccaromyces cerevisiae antibodies; pANCA: Perinuclear anti-neutrophil cytoplasm antibodies.

Gastrointestinal manifestations such as lupus mesenteric vasculitis, protein-losing enteropathy, intestinal pseudo-obstruction, acute pancreatitis, and celiac disease may be present in SLE [22]. Gastrointestinal findings, mainly abdominal pain, can be seen in 20% of pediatric patients with SLE. Lupus enteritis is rarely the first finding in SLE that starts at pediatric age [23]. Our patient who was diagnosed with SLE in this study was a 12-year-old female patient; she was also diagnosed with neurofibromatosis 1 with MSH6 mutation. MSH6 mutation is a DNA mismatch repair gene that causes hereditary non-polyposis colorectal cancer [24]. Our patient who was diagnosed with SLE had no gastrointestinal complaints; however, because of the potential risk of colorectal cancer development due to the mutation, upper and lower gastrointestinal endoscopies were performed, and no pathology was detected.

An adult case diagnosed with Sjögren's syndrome 5 years after the diagnosis of eosinophilic gastroenteritis has been reported [25]. In addition, an adult case who developed celiac disease while being followed up with Sjögren's syndrome was mentioned [26]. Since both Sjögren's syndrome and celiac disease are autoimmune diseases, they are likely to coexist. Bartoloni et al. [27] reported the prevalence of celiac disease in adult patients with Sjögren's syndrome to be 6.8% and therefore stated that young patients with Sjögren's syndrome should be screened for celiac disease. In this study, while a patient was being followed up with the diagnosis of Sjögren's syndrome, the anti-endomysium antibody IgA level was checked due to prolonged diarrhea, and a diagnosis of celiac disease was made histopathologically. Sherman et al. [28] reported that the prevalence of celiac disease in pediatric patients who had rheumatic evaluation was 2%. They emphasized that the patients were mostly admitted with extraintestinal symptoms and that musculoskeletal complaints improved after following a gluten-free diet.

Gastrointestinal involvement has been reported at a rate of 42–74% in juvenile systemic scleroderma. Esophageal involvement is prominent, and stricture, gastroesophageal reflux disease, and dysmotility can be seen in the esophagus [29, 30]. Management of gastroesophageal reflux disease is important to prevent stricture in the esophagus and Barrett's esophagus, which is a premalignant formation [31]. In a study, the risk of transformation of Barrett's esophagus to malignancy in patients with systemic sclerosis was stated as 3%/year [32]. In this study, Barrett's esophagus was detected in a patient with scleroderma.

FMF is the most common autoinflammatory disease. The prevalence of FMF in Turkiye is 1/1000 [33]. Studies have reported that FMF, the most common autoinflammatory disease, and JIA, the most common autoimmune disease, are seen together [34–36]. It is stated that MEFV gene mutation contributes to the formation of JIA. However, there is an association between FMF and inflammatory bowel diseases. In this study, inflammatory bowel disease was found in 0.7% of the patients with FMF. The MEFV gene encodes the pyrin protein, which is believed to be a regulator of inflammation. Mutation in the MEFV gene triggers inflammation in which IL-1 and NFκB play a role, opening the way for the formation of inflammatory bowel disease [37]. M694V mutation was detected in most of our patients with FMF. In our study, five FMF patients had Crohn's disease. Moreover, two had ulcerative colitis. Four patients with FMF also had JIA. Two of these patients had Crohn's disease, one had juvenile polyps in the rectum, and the other had celiac disease. No direct relationship has been shown between FMF and celiac disease in previous studies. It has been reported that autoimmune diseases can be seen together or may be coexistent [38–40]. No information was found in the literature about FMF or JIA-associated juvenile polyps. The juvenile polyps in our case were evaluated as coexisting. One of the patients with FMF had chronic recurrent multifocal osteomyelitis (CRMO) and Crohn's disease was detected as a result of the endoscopic evaluation performed due to abdominal pain. CRMO, which is an inflammatory disease of bone, is associated with other autoimmune diseases, such as inflammatory bowel disease [41]. In HIDS, also known as mevalonate kinase deficiency, most patients may have gastrointestinal symptoms such as abdominal pain, vomiting, and diarrhea during attacks [42]. Martins et al. [43] stated that mevalonate kinase deficiency may cause apthous or ulcerative disease in any part of the gastrointestinal tract and this rare autoinflammatory disease is among the causes of monogenic early-onset inflammatory bowel diseases. In the present study, gastritis was detected in the HIDS patient who had abdominal pain.

In this study, the gastrointestinal involvement of the patients with autoimmune and/or autoinflammatory diseases was heterogeneous. Inflammatory bowel disease was detected in 33% of patients with autoimmune diseases and 56% of patients with autoinflammatory diseases who consulted with the pediatric gastroenterology department. Serological tests such as ANCA and ASCA are used to support the diagnosis of ulcerative colitis or Crohn's disease. In ulcerative colitis, ANCA is positive in 60–70% cases, while in Crohn's disease, ASCA is positive in 50–70% cases [15]. In this study, serological screening was performed for most patients with suspected inflammatory bowel disease, and 40% positivity was obtained.

The present study has some limitations. First, since it was a retrospective study, obtaining medical information about the patients was difficult. Second, due to the small number of cases, evaluation of gastrointestinal findings in autoimmune and autoinflammatory diseases was limited.

Conclusion

Both autoimmune and autoinflammatory rheumatic diseases can cause gastrointestinal complaints. In our study, approximately half of the cases were diagnosed with inflammatory bowel disease. In addition, gastrointestinal complaints persisting despite treatment of the rheumatic disease should never be ignored and should be directed to a pediatric gastroenterologist without wasting time. However, the addition of ANCA and ASCA tests to perform autoantibody screening in patients with rheumatic diseases may shed light on inflammatory bowel diseases. Pediatric rheumatology specialists should pay attention to gastrointestinal questioning while evaluating autoimmune or autoinflammatory diseases; especially, patients with M694V mutation should be closely monitored in terms of inflammatory bowel diseases.

Ethics Committee Approval: The Erciyes University Clinical Research Ethics Committee granted approval for this study (date: 09.09.2020, number: 2020/447).

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Authorship Contributions: Concept – DA; Design – DA, APK; Supervision – DAr; Fundings – DA, APK; Materials – DA, APK; Data collection and/or processing – DA, APK; Analysis and/or interpretation – DA; Literature review – DA; Writing – DA; Critical review – DAr.

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