Irritable Bowel Syndrome in Childhood: Review

Çocuklarda İrritabl Barsak Sendromu

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ABSTRACT Irritable bowel syndrome (IBS), is also known spastic colon, is one of the functional bowel diseases. Etiology of IBS is unknown and is associated with symptoms such as diarrhea and constipation. It usually affects both adults and adolescents. Functional bowel differences, disordered defecation habits and chronic abdominal pain, which is the most common of the symptoms, is due to bowel disorder. The frequency of the pain varies from patient to patient and is usually observed on the around umblicus but the pain observed another places on the abdomen. Etiopathogenesis hasn't become definite yet. The second important symptom is disturbed defecation and the changes in defecation pattern. Constipation and diarrhea often follow each other. Patients need to defecate after each meal. Dyspeptic symptoms; especially postprandial abdominal tenderness, abdominal discomfort, bloating, gas, indigestion, loss of appetite, nausea are also common in IBS. Diagnostic criteria which named Rome III criteria based on recurrent abdominal pain or discomfort following; improvement with defecation or change in frequency of stool or stool appearance. We report here; irritable bowel syndrome, diagnosis and treatment of it in children.

Key Words: Child; irritable bowel syndrome

ÖZET İrritabl barsak sendromu (İBS) spastik kolon olarak da bilinen; fonksiyonel barsak hastalıklarından biridir. Etiyolojisi tam kesinleşmemiştir ve daha çok konstipasyon ve ishal gibi semptomlar ile karakterize bir hastalıktır. Genelde adolesan ve erişkinleri etkilemektedir. Organik bir neden olmaksızın barsaklarda fonksiyon değişiklikleri-dışkılama düzenindeki değişiklikler ve kronik karın ağrısı başlıca semptomlardır. Karın ağrısı; şiddeti, sıklığı hastadan hastaya değişiklik gösteren ve emosyonel stres, soğuk, bazı yiyecekler, bazı ilaçlarla şiddeti artan özelliktedir. Karın ağrısı genellikle göbek çevresinde olmakla birlikte birçok hastada farklı yerlerde de olabilmektedir. Etiyolojisi henüz netleştirilememiştir. Karın ağrısı dışında dışkılama rahatsızlıkları ve dışkılama düzenindeki değişiklikler ikinci önemli semptomdur. Çoğu kez konstipasyon ve ishal hali birbirini izler. Hastalar her yemekten sonra defekasyon ihtiyacı duyarlar. Dispeptik yakınmalar; özellikle postprandial karın gerginliği, karın rahatsızlığı, karın şişliği, gaz, hazımsızlık, geğirme, iştahsızlık, bulantı da İBS'de sık görülen yakınmalardır. Tanısında detaylı anamnez ve fizik bakı önemlidir. Uzun süredir devam eden karın ağrısı, ishal, konstipasyon dönemlerinin birbirini takip etmesi, hasta görünümün olmaması tanıda önemlidir. Son yirmi yıl içinde İBS tanısında kolaylık sağlayan bazı kriterler ortaya sürülmüştür. Karın ağrısı ya da karında rahatsızlık hissi ile bu duruma eşlik eden dışkılama düzenindeki değişiklikler ve dışkının görünüm değişiklikleri IBS tanısında Rome III kriterleri olarak kullanılmaktadır. Bu derlemede İBS'nin çocuklarda semptomları, tanısal yöntemleri ve tedavi yaklaşımları anlatılmaktadır.

Anahtar Kelimeler: Çocuk; irritabl barsak sendromu

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Irritable bowel syndrome (IBS) is a functional bowel disease that it come across at especially adolescents - adults and whose incidence is not known clearly in the world. Etiopathogenesis of the IBS hasn't become

definite yet, however physical and psychophysiological reasons have been proposed throughout childhood and adulthood.[1] Getting anamnesis at the beginning is important to diagnose. The disease which can be seen in all over the world, is more on girl compared to boys.[2-4] IBS can be mostly seen at the ages between 20 and 50 years. In children IBS incidence is unknown. Recurrent abdominal pain is generally diagnosed functional abdominal pain, however IBS is also diagnosed with Roma III criteria in aged 4–18 years.[5] According to a research which was carried out on 5403 adolescent and the children between 6 and 18 years in China in 2004, it is stated that its prevalence is variable due to the geographical regions and the percentage is 13%.[6] It is also observed in the same study that the incidence on the girls is more than the boys and the age factor has no difference statistically. In a study reported that prevalence of IBS ranges from 2.8% to 25.7% in 38,076 children and adolescents patients.[7] A meta-analysis study included 58 articles, including 196,472 children had functional abdominal pain disorders in which irritable bowel syndrome was reported most frequently (8.8%). This study reported that IBS seen in South America (16.8%) and Asia (16.5%) compared to Europe (10.5%).[8] Although studies shown prevelance of IBS, the real incidence of the disease is not known.

ETIOPATHOGENESIS

Etiopathogenesis hasn't become definite yet. Although it has been put forward that it results from the interaction disorder of the primary pathophysiological mechanism in the brain bowel mechanism, it hasn't been proved yet.[9] Altered brain-gut interactions; in rectal, colonic and small bowel motility have been reported and may be associated with characteristic IBS symptoms. The brain-gut axis is a pathway that links cortical centers with visceral afferent sensation and intestinal motor function. Some neurotransmitters including cholecystokinin, vasoactive intestinal peptide, substance P, serotonin (5-hydroxytryptamine [5-HT]), and many others role out in different sites in the brain and gut. It leads on effects on gastrointestinal motility, pain control, emotional behavior, and immunity.[10] Several studies suggest that irritable bowel syndrome may have a genetic basis. The genetic theory is based on twin studies which have shown a higher concordance rate for irritable bowel syndrome in monozygotic twins than in dizygotic twins.[11-13] Levy et al. reported that the proportion of dizygotic twins with irritable bowel syndrome who have mothers with irritable bowel syndrome was greater than the proportion of dizygotic twins with irritable bowel syndrome who have co-twins with irritable bowel syndrome.[14] Gene polymorphisms have also been reported about etiopathogenesis of IBS. Several studies shown that irritable bowel syndrome may be associated with alpha-adrenergic receptors, interleukin-10, transforming growth factor, tumor necrosis factor-alpha, and sodium channel.[15,16] The infections have been reported in recent years. Since it has the similar symptoms with the lack of lactase once, it has been understood that the charts had been confused. Lots of central and perioheric factors (genetic, environment) have a role on the etiopathogenesis of the illness. Diversified gastrointestinal motility, visseral sensivitity, stress, infection and inflammation are the pathophysiological mechanism which can be accepted as genetic factors. The studies especially have focused on stres factor.[5] Even though stress affects the bowel of both the healthy people and the patients who have IBS, recent proof has shown that corticoropin which is the major mediator of the stress on stem of the brain bowel can have a bigger reactivity on the releasing factor. The role of stres can be important especially on the change of the brain bowel interaction which results from development of IBS symptoms or inflamation.[17] It is stated in Camilleri and Chang's article about IBS that the bacterial colonization has changed on the incidents of IBS (small intestinal bacterial overgrowth) and this incident has caused an cellular infiltration and mucosal change. For instance; it is shown that there is a rise in number not only in mast cells and T lymphocyte in the bowels with IBS but also a rise in cycle amount on TNF-alpha, Il-6 and IL-8.[18] Serotonin, which has an important role on bowel motility, is an important booster of sensitivity and

secretion. Diversified serotonin signal mechanism, including the decresaed level of serotonin retaking carrier protein on IBS was reported in the last years.[19] This carrier proteins comes up as the main mechanism. The body arranges the amount of serotonin in extracellular gap with it and it is identified genetically on every person with the presence of long, short and heterozygote polymorphism.[20] Postinfection IBS (PI-IBS) is one of the 7-15% observable IBS antithesis especially after Salmonella, Shigella, Campyobacteria infections. In this group; except from bacterial infections. Viral infections (rotavirus, adenovirus, kalisivirus etc) and parasitic infections (Giardia lamblia, Blastosistis hominis) have a role in etiology.[21] Although this kind of illness has been identified usually in Europe, it has also been reported in China and Korea. It exist with diarrhoea and abdominal pain as a clinical incident. The diagnosis is hard and the patient is firstly examined by the psychiatrists. If the patients are depressive and anxious after acute gastroenteritis or the patients are female or young, they are at the risk for PI-IBS. Abnormal motor functions have been discussed in IBS's etiopathogenesis. When there is constipation in IBS, haustral contractions increases and hipermotility appears. When diarrhea dominates, segmental contractions decreases and booster waves are normal or decrease. In both groups, colonic motiliy, cholinergic drugs, gastro, cholecystokinin increase with physcological stres. In other words; gastrologic reflex is strong in IBS, but it begins later and lasts for a long time.

CLINICAL SYMPTOMPS

Abdominal pain is the most frequent symptom. The pain can be dull, achy, colicky, or sharp and occur anywhere in the abdomen but is commonly located in the hypogastric or periumbilical regions. The pain has no specific pattern, it's frequecy differs from patient to patient and increases with emotional stress, cold and some food. Abdominal pain characterized by normal physical examination and no alarm symptoms (involuntary weight loss, unexplained fever, urinary symptoms etc.).[22] Bloating, increased belching, flatulence are seen in patients with irritable bowel syndrome but they are less common in children than adults. Other GI symptoms (ie, heartburn, dyspepsia, nausea, vomiting) are reported in 25-50% of adult patients. Dyspeptic symptoms are present in as many as 30% of adolesan pediatric patients with irritable bowel syndrome.[23] The change in the order of defecation is the second significant symptom. Mostly constipation and diarrhea follows each other. The patients need defecation after every meal and this situation is much more frequent after breakfast. The bowel secretion are increased in this illness. The recent studies have shown that VIP, seratonin and calcitonin cause painless diarrhea.[24]

Crohn disease, parasitosis, human immunodeficiency virus infection, lactose intolerance, malabsorption syndromes, ulcerative colitis should be considered in differential diagnosis in IBS. No specific laboratory markers are noted for IBS. Diagnosis of IBS relied on Rome III criteria in pediatric patient with IBS. In classic cases should consist of the following: CBC count, erythrocyte sedimentation rate, stool studies and parasites, stool cultures and stool *Clostridium difficile* toxin assay may detect for rulling out organic pathologics.

DIAGNOSIS

Rome III criteria is

Recurrent abdominal pain or discomfort at least days/month in the last months associated with two or more of the following:

Improvement with defecation

Onset associated with a change in frequency of stool

Onset associated with a change in form (appearance) of stool

* Criterion fulfilled for the last months with symptom onset at least months prior to diagnosis

** "Discomfort" means an uncomfortable sensation not described as pain.

Anamnesis takes a significant place in diagnosis. Abdominal pain which lasts for many years, diarrhea, following each period of the constipation, not having the appearance of the patient are very important for diagnosis. The physical appearance are usually normal. The growth and development

are at the normal rate. The laboratory analysis are usually used for eliminating other diseases.

TREATMENT

Priority in the treatment is based on the relationship between the patient and the doctor and a multidiscipliner approach. In the double blinded - placebo controlled study on 42 IBS diagnosed incident, it was stated that the use of mint oil decreased the complaints as 75 percent of the patients who have especially abdominal pain and dispeptic complaints.[25] The reason for using mint oil of the patients who have IBS was that the skill of affecting as an ordinary muscle relaxant and decreasing the abdominal pain and distension potentially.

Grigoleit and Grigoleit have revised the literature about the mint oil (180-200 mg enteric covered pills (1 or 2 tablets a day) and they found 15 studies have been practised on IBS patients and one child who have abdominal pain. It has been compared in 12 studies with placebo and in 3 studies with anticolinergics. 8 of the 12 studies which were placebo-controlled have had meaningful effects in favour of mint oil statistically. As the general success; the average rate of the answers for the mint oil was 58% (between 39-79%).[26] An antidepressant selective serotonin reuptake inhibitor citolapram is used by the incidents of IBS, it is observed that it is very effective on not only present complaints, but also on anxiety and depression.[27] In a double blinded- placebo controlled study; cyproheptadin which was 5-HT2 receptor antagonist was succeeded 86 percent of the incidents.[28] Tegaserod which has serotonin agonist isn't recommended at the age of childhood. That agent which was experimented in constipation incidents more than abdominal pain is said to cause tendencyto cerebrovascular diseases at the adulthood.[29] Bahar et al. reported that amitriptyline reduces diarrhea, periumbilical pain and right lower quadrant pain in adolescents between the ages of 12 and 18 years.[30] One multi-center crossover study shown that probiotics reduces the intensity and frequency of abdominal pain in children with IBS. In this study total of 59 children were evaluated and abdominal pain, abdominal bloating/gassiness and family assessment of life disruption were improved significantly.[31] In a randomized study involving 78 children (total of 345 children aged 4-18 years) with IBS, there was seen clinical recovery 94.9% of 39 children treated with trimebutine maleate. Authors concluded that trimebutine maleate is an effective agent for treating childhood IBS.[32] Biopsychosocial modifying therapies have been reported in recent years. One of the these therapies is Hypnotherapy. Studies have shown that hypnotherapy may produce a beneficial effect in children with IBS.[33-35] A randomized controlled study which compared hypnotherapy (n= 27) with standard medical treatment (n= 23) and followed up for a mean duration of 4.8 years showed that 68% of children in the hypnotherapy group remained in remission as compared to only 20% in the control group.[36] A Cochrane review which included six trials conducted in children aged between 5 to 18 years with recurrent abdomainal pain (RAP) comparing cognitive behavioral therapy (CBT) with standard therapies may be a useful intervention for children with RAP and IBS.[37] In a pilot study, 20 children aged between 8-18 years were trained yoga by a children's yoga teacher.[38]

CONCLUSION

IBS has a lot of pathophysiological mechanism such as visseral hipersensitive, verified motility and disregulation of brain bowel. The new bounds are developing to understand pathophysiology of this disease. Although there is an ongoing connection about the role of serotonerjik and signal-transduction pathways on IBS; studies are expanding directly to the other important neurotransmitters and hormones which is not known that it regulates the bowel functions and has an important role on this disease.

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