

Case Report / Olgu Sunusu**Sigmoid Colon Elongation Evaluation by Volume Rendering Technique**

SİGMOİD KOLON ELONGASYONUNUN VOLÜM RENDERİNG TEKNİĞİ İLE DEĞERLENDİRİLMESİ

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Abstract

Sigmoid colons have various measurements, shapes, and configurations for individuals. In this subject there are rare clinical trials to answer the question of sigmoidal colon maldevelopment predicting a risk for volvulus. Therefore, sigmoid colon measurement may be beneficial to decide for volvulus. In a study, sigmoid colon diameters were evaluated during abdominal surgeries and it was found that median length was 47 cm and median vertical mesocolon length was 13 cm. We report a 14-year-old female patient who has a sigmoidal colon measured as nearly 54 cm. We used tomographic equipments for this evaluation. We know that MRI technique was used for this purpose but, there has not been data for MRI predicting the sigmoidal volvulus. We hope that our findings by this evaluation can contribute to insufficient literature of sigmoidal elongation.

Key words: Sigmoid colon elongation; computerized tomography; volume rendering

Özet

Sigmoid kolon, kişiye özel olarak, çeşitli uzunluklara, şekillere ve biçimlere sahiptir. Bu konuya ilgili olarak, sigmoid kolonun gelişim bozuklıklarının volvulus riskini ön görüp göremeyeceğine dair klinik çalışmalar bulunmaktadır. Bu yüzden sigmoid kolon ölçümü volvulus ihtimalini gösterebilmek için anlamlı olabilir. Bir çalışmada, karın ameliyatlarında sigmoid kolon ölçümleri yapılmıştır ve median kolon uzunluğu 47 cm ,median vertikal mesokolon uzunluğu 13 cm ölçülmüştür. Çalışmamızda 14 yaşında bir kız hastada sigmoid kolon median uzunluğu 54 cm ölçülmüştür. Bunun için tomografiden yararlanılmıştır. MR Görüntülemenin bu amaçla kullanıldığını ve sigmoid volvulus ön görüşü için herhangi bir MR verisi olmadığını biliyoruz. Bulgularımızın sigmoid elongasyonla ilgili yetersiz olan veriye katkı yapacağını umuyoruz.

Anahtar Kelimeler: Sigmoid kolon elongasyonu; bilgisayarlı tomografi; volüm rendering

Introduction

Pathologic sigmoid colons have not been figured out clearly yet, but redundancy and/or mesenteric elongation which have been reported with volvulus may help to define the risk thresholds of volvulus (1). This is only a suggestion because there are various differences of human sigmoid colons in their measurements, shapes, and configurations (2). On the other hand, sigmoid elongation and/or malposition have usually been seen in adults and most of them are in the left lower quadrant confusing with the diseases like malrotation, volvulus and even invagination (1, 3). Consequently, diagnosis can be difficult at pediatric age group for two reasons: There are not many reports for pediatric patients and there are different clinical entities that can simulate elongation. In this report, we evaluate our patient for sigmoid elongation and evaluate the efficiency of volume rendering technique.

Case Report

A 14-year-old female suffering from chronic abdominal pain and constipation approximately for 6 years was admitted to Pediatric Surgery clinics. Her physical and laboratory examinations were normal except for a significant gas collection in the left upper abdominal quadrant in plain radiograph (Figure 1). This collection was detected as sigmoid colon elongation in barium enema (Figure 2). To demonstrate the elongation in details, virtual colonoscopy had been performed with Eight-channel multidetector CT suite (GE Medical systems Milwaukee, Wisconsin, USA) and Volume Rendering Technique was preferred in the workstation (adw 4.2, GE Medical systems Milwaukee, Wisconsin, USA) (Figure 3). Sigmoid colon was measured approximately 54 cm long and therefore, sigmoid elongation was diagnosed.

Colon biopsies which was performed for a probable congenital megacolon, revealed normal. Patient was taken in a close follow-up program with detailed explanation of sigmoid volvulus.

Figure 1: Plain abdominal radiography showing the gas mass on the upper left quadrant.



Figure 2: Barium enema reveals the sigmoid colon elongation.



Discussion

During the evaluation stage of our patient, we search for the easiest and effective way of diagnostic examination. Literature encompasses a development for diagnose of the sigmoid diseases defining new technological instruments. For instance, cross-sectional imaging magnetic resonance is one of these new techniques (4). As a newly defined diagnostic tool, there has not been wide data about magnetic resonance imaging measurements that can predict the sigmoid volvulus. Alternatively, in recent years, volumetric imaging has gained importance for diagnosis (5). Modern computed tomography and magnetic resonance imaging scanners are capable for these types of images and these instruments allow reconstruction of high spatial resolution volume data sets (5). Volume rendering is also useful for an insight evaluation (5). Freely navigating by means of volume rendering through a 3D data set may be helpful for radiologists and clinicians to understand the anatomic characteristics of the disease which will help to improve the patient's management (5). Gastrointestinal tract lesions can be shown by CT 3-D imaging clearly and directly (6). Also 3-D can accurately localize of lesions and comprehensive observation of shapes (6). In a study, Duan et al used Volume rendering technique to evaluate multiple types of gastrointestinal diseases and only two of them failed for diagnosis (6).

In our patient, we used the volume rendering technique for sigmoid evaluation. The technique was used after virtual colonoscopy imaging and evaluation was finished in a short time with reliable information for clinical decision as we demonstrated a correlation of the findings between barium enema and volume rendering technique in the patient. The program was thought to be suitable for this kind of patients in clinical routine.

In short, it is not possible to say that volume rendering is a precise method for sigmoid elongations according to one patient

evaluation but we suggested that volume rendering technique may permit clinical trials on the subject sigmoid elongation and the disease may be diagnosed with computed tomography easily.

Figure 3: Computerized tomography evaluation with Volume Rendering Technique.



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