A 33-year-old male presented with an acute onset of back pain and abdominal pain. He was 189.9 cm tall and had an arm span of 194 cm, and had mild pectus carinatum as well as arachnodactyly. Plain radiographs showed kyphoscoliosis of the lumbar spine, bamboo spine of the thoracic spine, and sacroiliitis of the pelvis. Abdominal computed tomography revealed debakey type 3 aortic dissection. We prescribed beta blockers to control his blood pressure. According to the modified New York criteria, we diagnosed him with HLA negative ankylosing spondylitis and initiated therapy with nabumetone and sulfasalazine. We later diagnosed Marfan syndrome based on the Ghent criteria and mutation screening at the fibrillin-1. After treatment, he has been followed up without symptoms or complications. (Korean J Med 2013;84:873-877)

Keywords: Marfan syndrome; Aortic dissection; Ankylosing spondylitis

INTRODUCTION

Marfan syndrome is caused by a mutation of the genes encoding fibrillin-1 (FBN1) [1,2]. Aortic dissection is prevalent in patients with Marfan syndrome and is caused by the mutation of the genes encoding FBN1 and type III procollagen [3]. Ankylosing spondylitis is an HLA-B27-associated inflammatory disease that affects mainly the sacroiliac joints and axial skeleton. It may also cause extraskeletal manifestations, such as acute anterior uveitis, aortic insufficiency, and cardiac conduction disturbances. The mutation of the FBN1 gene or a cell-mediated auto-immune response in ankylosing spondylitis are common pathologic sequelae [4]. Aortic dissection is particularly prevalent in patients with Marfan syndrome and Ehlers-Danlos syndrome. Mutation of the FBN1 gene and type III procollagen have been implicated in some cases. The coexistence of Marfan syndrome and ankylosing spondylitis has been reported only twice in the literature [4,5], and furthermore, aortic dissection with coexistence of Marfan syndrome and
ankylosing spondylitis has never been reported. Thus, we report this rare case and review the literature.

CASE REPORT

In February 2007, a 33-year-old male presented with acute back pain and abdominal pain. At admission, he had a systolic and diastolic blood pressure of 170/100 mmHg, a heart rate of 80/min, and a body temperature of 36.5℃.

On examination he was 189.9 cm tall, weighed 85 kg, and had an arm span of 194 cm. He had mild pectus carinatum and arachnodactyly. Abdominal radiographs showed kyphoscoliosis of the lumbar spine and a plain anterioposterior radiograph of the pelvis showed sacroiliitis (Fig. 1). Plain anterioposterior and lateral views of the lumbar spine showed scoliosis and lordosis of the lumbar spine (Fig. 2). A plain lateral view of the thoracic spine showed kyphosis and syndesmophytes (Fig. 3) and pelvic bone computed tomography (CT) showed sacroiliitis at the sacroiliac joint (Fig. 4). He presented with a 6-month history of predominantly lumbar spinal pain with morning stiffness which lasted for more than an hour, and which improved with exercise. He also reported intermittent buttock pain. The Patrick’s test was positive. He had limited chest expansion (2 cm), but no restriction in lumbar pain.

Figure 1. Plain anterioposterior view of the pelvis showed bilateral sacroiliitis (black arrow).

Figure 2. Plain anterioposterior (A) and lateral views (B) of the lumbar spine revealed scoliosis and lordosis of the lumbar spine.
movement. On laboratory testing, he had an elevated erythrocyte sedimentation rate (ESR) at 32 mm/hr, and C reactive protein (CRP) at 4.19 mg/dL. Rheumatoid factor and HLA-B27 were negative. Therefore, we diagnosed him with HLA-B27 negative ankylosing spondylitis based on the modified New York criteria.

Computed tomography images of the abdomen and chest showed DeBakey type 3 aortic dissection (Fig. 5). We controlled the patient’s blood pressure with beta blockers and started him on nabumetone and sulfasalazine to treat the ankylosing spondylitis. After the first week, his CRP decreased to 1.05 mg/dL. Magnetic resonance imaging showed sacroilitis of both sacroiliac joints and
dural ectasia of the lumbar vertebral bodies (Fig. 6). Symptoms of Marfan syndrome; i.e., scoliosis, pectus carinatum, dilatation of the ascending aorta without aortic regurgitation on echocardiography, and dural ectasia affecting the lumbosacral spinal canal, were present. To confirm the presence of Marfan syndrome, a molecular study of the FBN1 gene was performed and a mutation of FBN1 on Chromosome 15q21.1 was identified. Thus, we diagnosed him with Marfan syndrome based on the Ghent criteria and mutation screening of FBN1. During treatment, his abdominal pain and back pain improved, after which he was discharged and has been followed up for 1 month without symptoms or complications.

DISCUSSION

Marfan syndrome is a heritable connective tissue disease first described by Bernard Antoine Marfan in 1896. The syndrome affects articular and non-articular structures, and can affect the eye and ascending aorta, resulting in significant morbidity. The syndrome is diagnosed using the Ghent criteria, which our patient satisfied, so we diagnosed him with Marfan syndrome. Marfan syndrome is inherited as an autosomal dominant trait. The disease is caused by a mutation of the gene encoding fibrillin-1, which is on the long arm of chromosome 15 [1]. Fibrillin-1 is a major component of extracellular matrix structures known as microfibrils, and mutation of the gene alters the structure of fibrillin-1, which contributes to the articular and non-articular features of the disease [1]. Thus, aortic dissection is prevalent in patients with Marfan syndrome, as it results from mutation of the FBN1 genes and type III pro-collagen. However, a correlation between the genotype and the cardiovascular phenotype has not yet been established. Identification of the mutation in the FBN1 and TGFBR2 genes in family members should be conducted at preventive checkups [3]. For this patient, the mutation study of the FBN1 gene was performed to confirm a clinical diagnosis of Marfan syndrome and the mutation of FBN1 on Chromosome 15q21.1 was identified. We will screen his family members for other genetic mutations.

Ankylosing spondylitis is an HLA-B27-associated inflammatory disease that mainly affects the sacroiliac joint. It may also involve peripheral joints and can manifest extra-skeletally, causing acute anterior uveitis, aortic insufficiency, and cardiac conduction disturbances. Diagnosis is achieved according to the modified New York criteria. To confirm the clinical diagnosis, a patient should have the presence of radiographic sacroiliitis plus any one of the following three criteria: a history of inflammatory back pain, limitation of motion of the lumbar spine, or limited chest expansion. Our patient was diagnosed with ankylosing spondylitis based on radiographic sacroiliitis, inflammatory back pain, and limited chest expansion. Ankylosing spondylitis begins with fibrosis and ossification of cartilage with enthesis, eventually leading to ankylosis and loss of mobility of affected joints. The coexistence of Marfan syndrome and ankylosing spondylitis has been reported only twice in the literature. Fietta, et al. [4] reported the first case, in which transthoracic echocardiography showed a prolapsed posterior mitral leaflet and mild aortic insufficiency with no aortic dilatation. Kiss C, et al. [5] reported the second case, in which echocardiography showed dilatation of the ascending aorta, mitral valve prolapse, and mild mitral insufficiency. In Marfan syndrome, cardiovascular abnormalities are a major source of morbidity and mortality. Also, ankylosing spondylitis patients may present with cardiac abnormalities. Takagi et al. [6] described the first reported case of Stanford type A (DeBakey type 1) acute aortic dissection without Marfan syndrome in HLA-B27-negative ankylosing spondylitis. Simkin, et al. [7] suggested that fibrillin-1 may be involved in the pathogenesis of spondylitic inflammation of the aorta and the eye as well as of bones and joints. Thus, the defective structure of fibrillin-1 in microfibrils or elastin fibers may account for the wide spectrum of clinical manifestations of Marfan syndrome and ankylosing spondylitis [7,8]. Additionally, the genetic mutation of fibrillin-1 in ankylosing spondylitis may cause aortic dissection. Our case may support the hypothesis proposed by Simkin, et al. [7] In conclusion, we reported here a rare case of coexistent ankylosing spondylitis and Marfan syndrome with aortic dissection.

중심 단어: 마르팡 증후군, 강직성 척추염, 대동맥 박리
REFERENCES


