

Percutaneous nephrolithotomy operation in a patient with severe kyphosis due to ankylosing spondylitis

Ankilozan spondilite bağlı ciddi kifoza olan hastada perkütan nefrolitotomi operasyonu

Tahsin Turunç, Barış Kuzgunbay, Özgür Yaycıoğlu, Cem Aygün, Hakan Özkardeş

Başkent University Faculty of Medicine, Department of Urology, Ankara, Turkey

Abstract

Ankylosing spondylitis is a chronic inflammatory form of arthritis that affects the spinal joints. The skeletal deformity caused by this condition may hamper surgical procedures by causing difficulties in patient positioning. We present our technique of patient positioning for percutaneous nephrolithotomy in a patient with severe kyphosis and immobility of the cervical spine caused by ankylosing spondylitis.

Key words: Ankylosing spondylitis; kyphosis; percutaneous nephrolithotomy.

Özet

Ankilozan spondilit, artrit spinal eklemleri etkileyen kronik inflamatuvar bir formudur. İskelet deformitesi, hastaya pozisyon vermedeki güçlükten dolayı cerrahi operasyonlara engel bir durum oluşturur. Burada ankilozan spondilite bağlı ciddi kifoza ve servikal omurgada hareket kısıtlılığı olan hastada yapılan perkütan nefrolitotomi operasyonundaki hasta pozisyon tekniğimizi sunduk.

Anahtar sözcükler: Ankilozan spondilit; perkütan nefrolitotomi; kifoz.

Submitted (Geliş tarihi): 03.01.2010

Accepted after revision (Düzeltilme sonrası kabul tarihi): 26.05.2010

Ankylosing spondylitis (AS), also known as Bechterew's disease, is a chronic inflammatory disease that primarily affects the axial skeleton and is characterized by ossification of the spinal joints and ligaments. Hyperkyphosis of the upper part of the spine is a frequent clinical problem in patients with ankylosing spondylitis.^[1,2]

Percutaneous nephrolithotomy (PCNL) is the surgical procedure of choice for patients with bulky renal calculi that are not appropriate for shock wave lithotripsy. Although severe skeletal deformity is accepted as one of the few contraindications of PCNL, there are limited data in the literature on PCNL in patients with skeletal deformities.

In this report, we present a case of PCNL carried out for staghorn renal calculi in a patient with severe thoracic kyphosis and immobility of the cervical spine due to AS, with special emphasis placed on patient positioning as well as surgical and anesthetic obstacles.

Case report

A 47-year-old man suffering from left flank pain was presented to our outpatient clinic. Upon evaluation of his medical history, we found he had been suffering from ankylosing spondylitis for 30 years. A physical examination revealed severe thoracic kyphosis and restriction of cervical movements (Fig. 1). His blood chemistry was normal. A plain radiograph revealed left staghorn renal calculi (Fig. 2), and intravenous urography confirmed this diagnosis. The patient decided to undergo a left PCNL after he was informed of possible operative complications. There were two major obstacles that had to be addressed during the operation. The first of these was caused by kyphosis, which did not permit the patient to be safely placed in the prone position due to the potential space between the patient's anterior abdominal wall and the operation table. This problem was overcome by filling the space between the table and the patient's anterior abdominal wall with pillows. The second obstacle was caused by his



Figure 1 Right lateral view of the patient showing severe kyphosis due to ankylosing spondylitis.

loss of cervical movements. Once the patient was safely in the prone position, his face was buried into the anesthesia table due to the restricted lateral rotation of the cervical spine; thus, ventilation following intubation would not have been possible. This problem was overcome by stabilizing the patient's head in a horseshoe head holder, which is usually used in neurosurgical procedures (Fig. 3). The operation table was tilted to the reverse-Trendelenburg position to prevent venous stasis of the head, although it was difficult to perform the operation in this position. The operation was performed under general anesthesia. After ureteral catheterization in a lithotomy position, the patient was tilted to the prone position. The pyelocalyceal system was approached with the insertion of

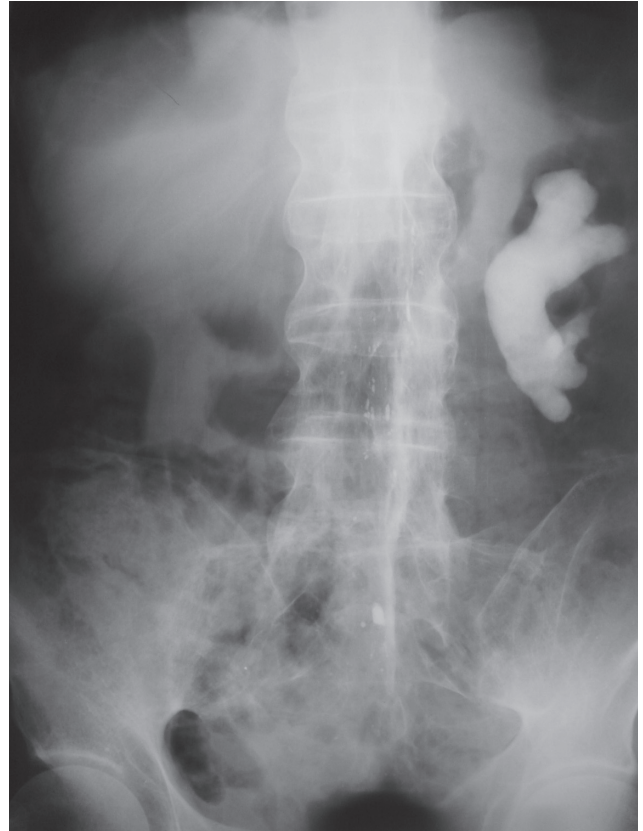


Figure 2 Left staghorn renal calculus in the plain radiograph.



Figure 3 Horse-shoe shaped head holder to support the head and to make ventilation possible in the patient with restricted lateral rotation of the head.

an 18-gauge Chiba needle from the upper and lower pole tracts with the guidance of fluoroscopy. The tract was dilated with Amplatz dilators (MarFlow®, Switzerland) through a guidewire, and a renal sheath

was inserted. Afterwards, nephroscopy was performed. A pneumatic lithotripter was used for stone fragmentation. The stone fragments were extracted by forceps. An 18F re-entry malecot nephrostomy catheter was inserted at the end of the operation. No residual fragments were detected in a kidney-ureter-bladder radiograph on the first day following the operation (Fig. 4). Pulmonary toilet training was initiated as soon as the patient recovered from anesthesia. The nephrostomy tube was removed on the second day after surgery, and the patient was discharged on the third day after surgery. Upon analysis, the stone was reported as a whewellite stone.

Discussion

Ankylosing spondylitis has well-defined renal complications, but urolithiasis has not been studied in detail. Secondary renal amyloidosis is the most common cause of renal involvement in AS (62%), followed by IgA nephropathy (30%), mesangioproliferative glomerulonephritis (5%), membranous nephropathy (1%), focal segmental glomerulosclerosis (1%), and focal proliferative glomerulonephritis

(1%).^[2] In their study, Vilar et al.^[3] reported renal abnormalities in 35% of AS patients, but did not assess the formation of renal calculi in any patients. In another study, the prevalence of renal stones was found to increase in AS patients.^[4] Ankylosing spondylitis itself is a contributing factor for changes in calcium metabolism due to spinal immobility, inflammatory cytokines, the prolonged use of non-steroidal anti-inflammatory drugs, and new bone formation.^[5]

Severe kyphosis of the spine in advanced AS is a well-known problem that reduces quality of life. Minor trauma can cause fractures in the rigid spine of those suffering from AS. Surgical procedures performed in special positions such as the prone position pose high risks for vertebral fracture in patients with skeletal deformities such as AS. Therefore, patients should be handled with utmost caution once they are anesthetized. In our case, the desired surgical position was achieved by the liberal use of bolster pillows to support the torso, the stabilization of the patient's head and cervical spine in a horseshoe head holder, and by tilting the table to a reverse-Trendelenburg position to prevent cerebral edema. This method can be used in similar situations to safely place the patient in the required surgical position for PCNL and other procedures performed in the prone position.

Conflict of interest

No conflict of interest was declared by the authors.

References

1. Carette S, Graham D, Little H, Rubenstein J, Rosen P. The natural disease course of ankylosing spondylitis. *Arthritis Rheum* 1983;26:186-90.
2. Strobel ES, Fritschka E. Renal diseases in ankylosing spondylitis: review of the literature illustrated by case reports. *Clin Rheumatol* 1998;17:524-30.
3. Vilar MJ, Cury SE, Ferraz MB, Sesso R, Atra E. Renal abnormalities in ankylosing spondylitis. *Scand J Rheumatol* 1997;26:19-23.
4. Korkmaz C, Özcan A, Akçar N. Increased frequency of ultrasonographic findings suggestive of renal stones in patients with ankylosing spondylitis. *Clin Exp Rheumatol* 2005;23:389-92.
5. Toussiroit E, Wendling D. Osteoporosis in ankylosing spondylitis. [Article in French] *Presse Med* 1996;25:720-4.

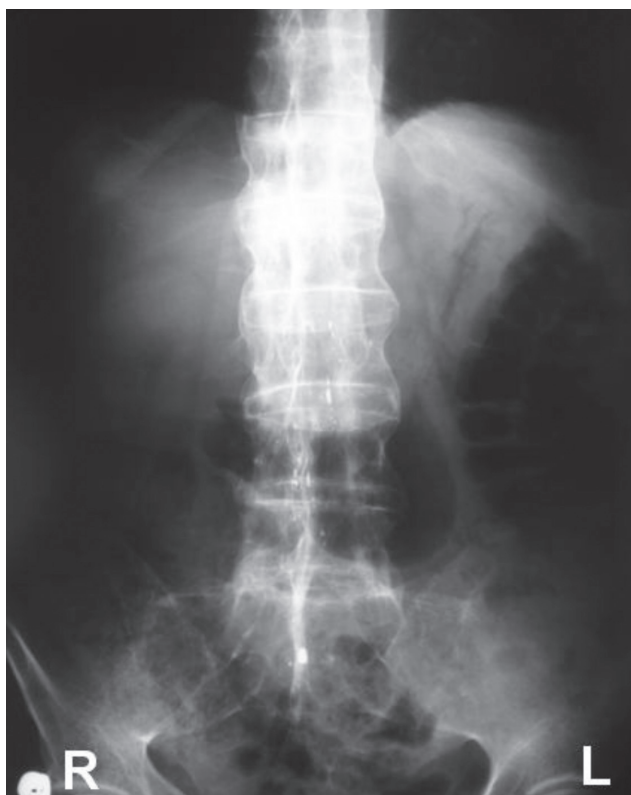


Figure 4

No residual fragments were detected by radiograph.

Correspondence (Yazışma): Yard. Doç. Dr. Tahsin Turunç. Dadaloğlu Mah. 39 Sok. No: 6 Yüreğir, 01250 Adana, Turkey. Phone: +90 322 327 27 27/1463 e-mail: drtahsinturunç@yahoo.com doi:10.5152/tud.2011.017