



:  
 :  
 30 ( :44 ) 34  
 30 ( :34 )  
 26 , 4 7MHz  
 ,  
 ,  
 ,  
 가  
 : 3.2-8mm( 5.1 ± 1.12)  
 1.3-5mm( 3.5 ± 0.78)  
 (p < 0.0001). 1.8-5mm(  
 3.0 ± 0.78) (p < 0.0001).  
 34 31 (91.2%) 26  
 4 (15.4%)  
 16 (47.1%) 2 (7.7%)  
 2 (5.9%)  
 : 가  
 ,  
 ,  
 (plantar fascia) (calcaneal 가 가 (9).  
 tuberosity)  
 , (tarsal arch) (10).  
 , 가  
 (plantar fasciitis) (1-  
 6). 가  
 10% (3,11).  
 (1-7), (pes cavus) (foot pronation) (3,6,11,12) 가 .  
 (7).  
 (2,3)  
 가 (3).  
 (8),

14:16 22-69 ( : 44 ) , 14:16 19-60 ( : 34 ) . 7MHz (Acuson 128XP, Mountain view, Calif) 가 (anisotropic) 가 (heel fat pad) 가 (outer margins) (Fig. 1). (dorsiflexion) , t-test 3.2-8mm( 5.1 ± 1.12) 1.3-5mm(

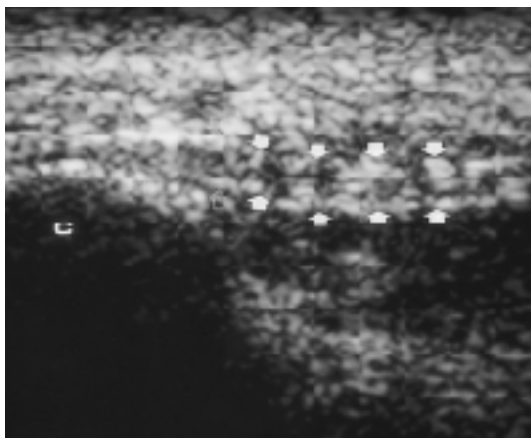


Fig. 1. Sagittal heel sonogram of a 24-year-old male volunteer. The normal plantar fascia has a hyperechoic, striated appearance(arrows) and attaches proximally to the calcaneus(c). The thickness of the plantar fascia(open arrow) was measured at its proximal end near its insertion into the calcaneus(c). C : calcaneus

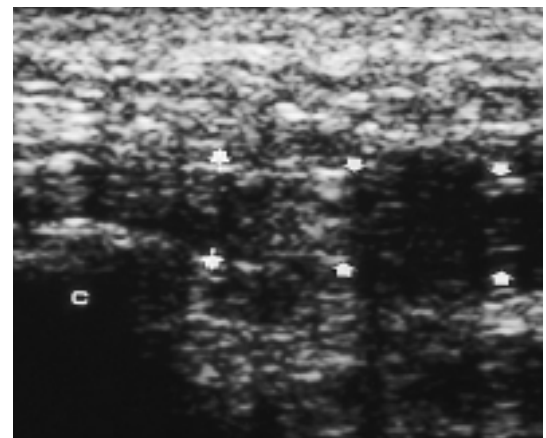


Fig. 2. Sagittal heel sonogram of a 24-year-old man who had a clinical diagnosis of right plantar fasciitis. The proximal plantar fascia of right foot is thickened and diffusely hypoechoic(arrows), which contrasts with the adjacent hyperechoic heel fat pad. C : calcaneus

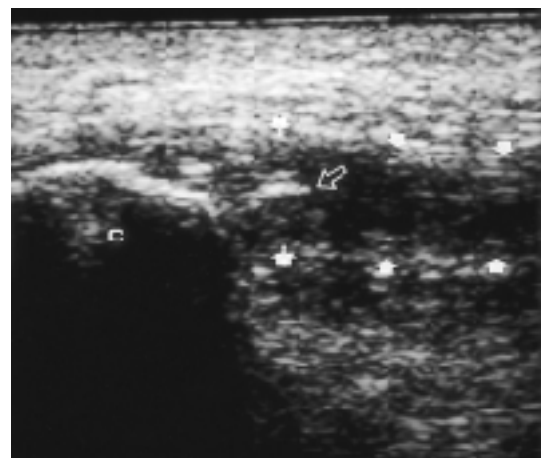
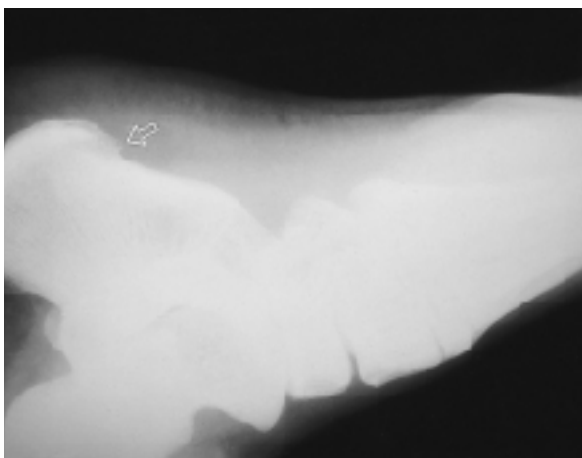


Fig. 3. A 40-year-old man who had a clinical diagnosis of left plantar fasciitis. A. Simple foot lateral view shows left calcaneal spur(arrow). B. Sagittal heel sonogram shows left calcaneal spur(open arrow) and thickened, diffuse hypoechoic plantar fascia(arrows). C : calcaneus

3.5 ± 0.78) ,  
 (p < 0.0001). 가 가  
 1.8-5mm ( (6,18).  
 3.0 ± 0.71) (p < 0.0001).  
 3.7mm (6,18).  
 가 3 , (3.7mm) 가 5  
 34  
 31 (91.2%) (Fig.  
 2) 26 4 (15.4%)  
 30 (0%)  
 16 (47.1%) (Fig. 3a,3b), 2 (7.7%)  
 (0%)  
 2 (5.9%) (Fig. 4a,4b).  
 가  
 (1-7). , ,  
 가 (1-7,14).  
 (15,16).  
 가  
 (3,11).  
 3.2-8mm(5.1 ± 1.12) Cardinal (3) 3.2-6.8mm(5.2  
 ± 1.13) Gibbon (12) 4.1-9.1mm(5.9 ± 0.97)  
 가

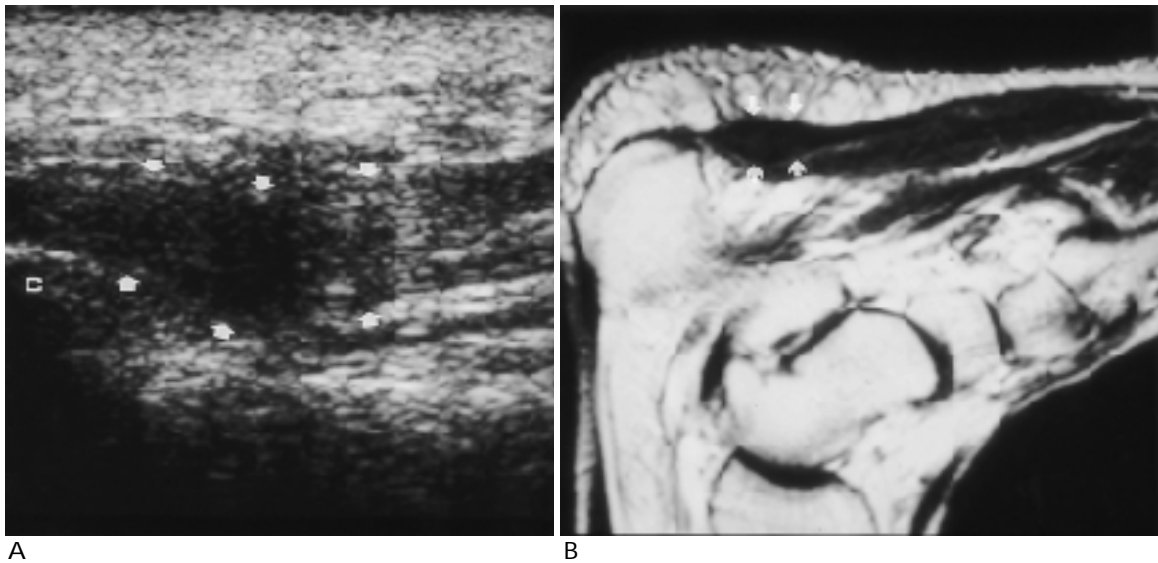


Fig. 4. A 63-year-old woman who had a clinical diagnosis of right plantar fasciitis.  
 A. Sagittal heel sonogram shows thickened, hypoechoic plantar fascia(arrows). There is some fluid collection around the plantar fascia. C : calcaneus  
 B. Sagittal T2WI of right foot shows focally thickened plantar fascia(arrows) and per fascial fluid collection.

1.8-5mm( $3.0 \pm 0.71$ ) Cardinal (3) 1.6-3.8mm( $2.6 \pm 0.48$ ), Gibbon (12) 2.4-4.3mm ( $3.3 \pm 0.38$ )

가 5  
2 가 3  
91.2% Cardinal (3) 84%, Gibbon (12)  
78% Cardinal

(20).  
(21) 가  
X-  
16 (47.1%) 2  
(7.7%)  
5.9% Gibbon  
(12) (n=150) 4%, Cardinal (3) (n=15) 0%

Cardi-nal, Gibbon  
가  
가

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## Sonographic Evaluation of Plantar Fasciitis<sup>1</sup>

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**Purpose :** To evaluate the sonographic findings of plantar fasciitis.

**Materials and Methods :** Both feet of 30 patients(mean age, 44years) in whom plantar fasciitis had been clinically diagnosed, and those of healthy volunteers(mean age, 34years) were evaluated with ultrasound(US) using a 7.0MHz linear array transducer. Heel pain was unilateral in 26 patients and bilateral in four. Sagittal sonograms were obtained in the prone position, and the thickness of the plantar fascia was measured at its proximal end near its insertion into the calcaneus. We also evaluated hypoechoic fascia, perifascial fluid collection, fiber rupture, calcaneal spur and calcifications.

**Results :** Plantar fascia thickness was significantly greater in the heels of patients with plantar fasciitis( $3.2-8\text{mm}$ ; mean,  $5.1 \pm 1.12$ ) than in their asymptomatic heels( $1.3-5\text{mm}$ ; mean,  $3.5 \pm 0.78$ )( $p < 0.0001$ ), in which it was similar to that of heels of patients in the control group( $1.8-5\text{mm}$ ; mean,  $3.0 \pm 0.71$ )( $p < 0.0001$ ). The proximal plantar fascia was hypoechoic in 31 symptomatic heels(91.2%), in four asymptomatic heels(15.4%), and in none of the patients in the control group. Calcaneal spurs were identified in sixteen symptomatic heels(47.1%), and in two which were asymptomatic(7.7%). Perifascial fluid collection was identified in only two symptomatic heels(5.9%).

**Conclusion :** In plantar fasciitis, sonography demonstrates that the fascia is thicker as well as hypoechoic. For the clinical diagnosis of planter fasciitis, US can therefore be used as an adjunct to clinical diagnosis.

**Index words :** Fasciitis

Foot, abnormalities

Foot, US

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