LE ENTESI : CLINICA E IMAGING

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CASO CLINICO

- Sesso maschile
- Anni 39, altezza 178 cm, peso 77 Kg
- Nessuna patologia pregressa significativa
- Nel 2008 dolore e limitazione funzionale agli achillei
- Terapia con FANS e antidolorifici a dosaggio pieno con risultati parziali e temporanei

CASO CLINICO

- Maratoneta (60-80 km di corsa alla settimana, miglior tempo 2h 28’)
- Non riesce più ad allenarsi per esacerbazione del dolore dopo lo sforzo
- Il dolore è accentuato al mattino al risveglio marcata difficoltà a muovere i primi passi con progressivo miglioramento con il movimento (circa 30’)

CASO CLINICO

- Trattato con riposo, FANS e terapia infiltrativa con steroidi con beneficio
- 6 mesi dopo sviluppa dolore oculare a destra con difficoltà alla visione
- Visita Oculistica : uveite anteriore acuta
- Trattamento locale steroideo con beneficio

Complicanze oculari : uveite anteriore

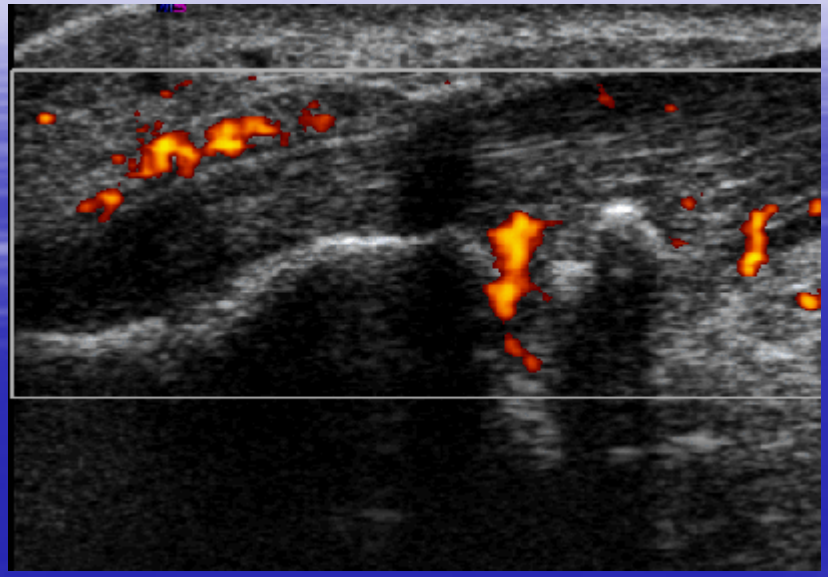
CASO CLINICO

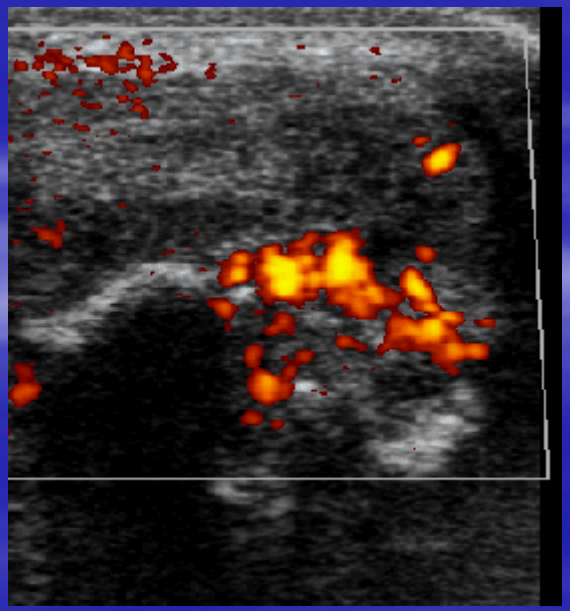
- Dopo 12 mesi nuova recidiva del dolore a calcagno bilaterale
- Visita reumatologica

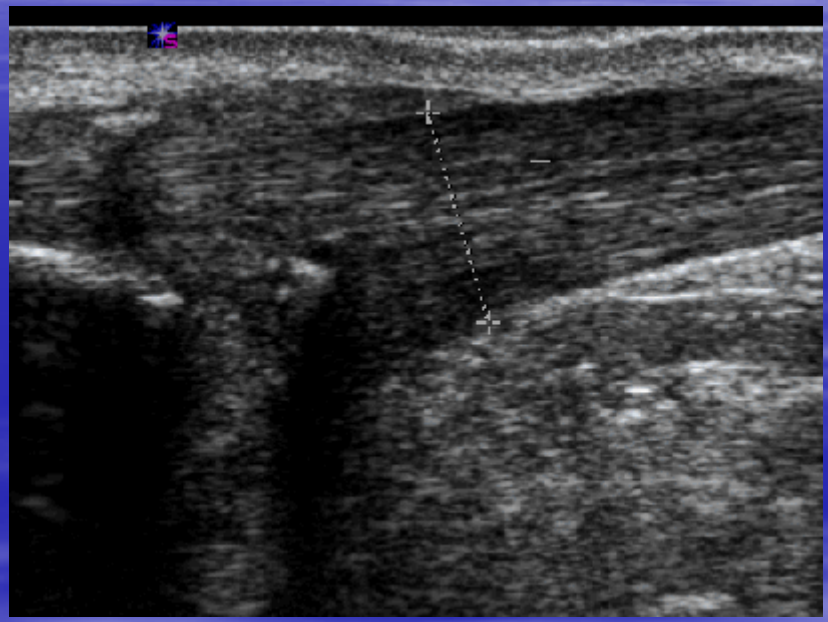
CASO CLINICO

- EO
- **Limitazione motilità rachide lombare**
- **BASDAI : 5.8 cm**
- **BASDAI entesi : 8.6 cm**
- **BASFI : 6.5 cm**
- **PCR 3.85 mg/dl, VES 32 mm/prima ora**
- **HLA-B27 +**
- **Indice entesitico Maastrict : 7**

Tendine di Achille in longitudinale prima della infiltrazione



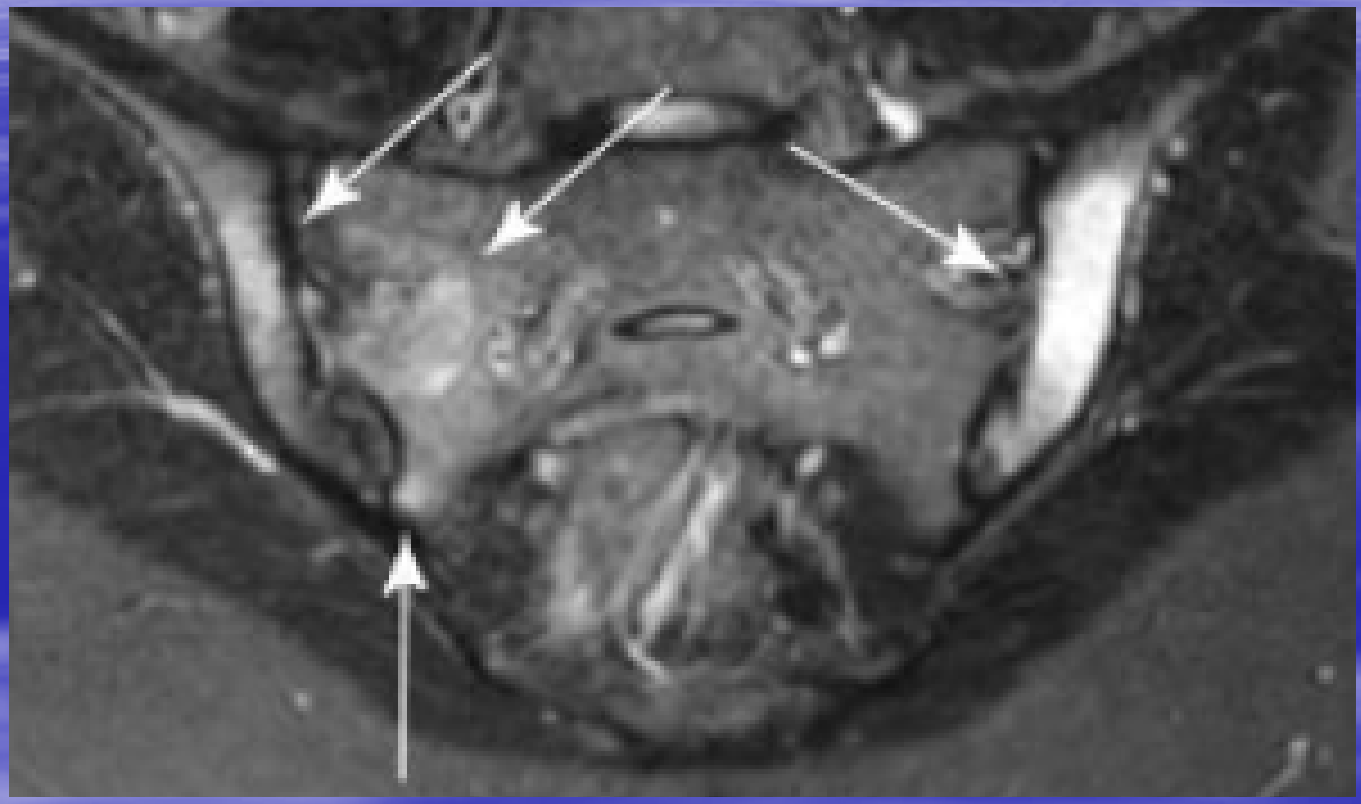




Radiografia standard bacino

Non aspetti riferibili a sacro-ileite

RMN delle sacro-iliache



Risonanza magnetica delle articolazioni sacro-iliache, sequenza STIR : sacro-ileite bilaterale (frecce) in proiezione semicoronale.

Problemi clinici

- Spondilite HLA-B27 positiva
- Terapia con FANS a dosaggio pieno
- Da 3 mesi dolore al calcagno, molto intenso al mattino con difficoltà alla deambulazione

Definitions EULAR

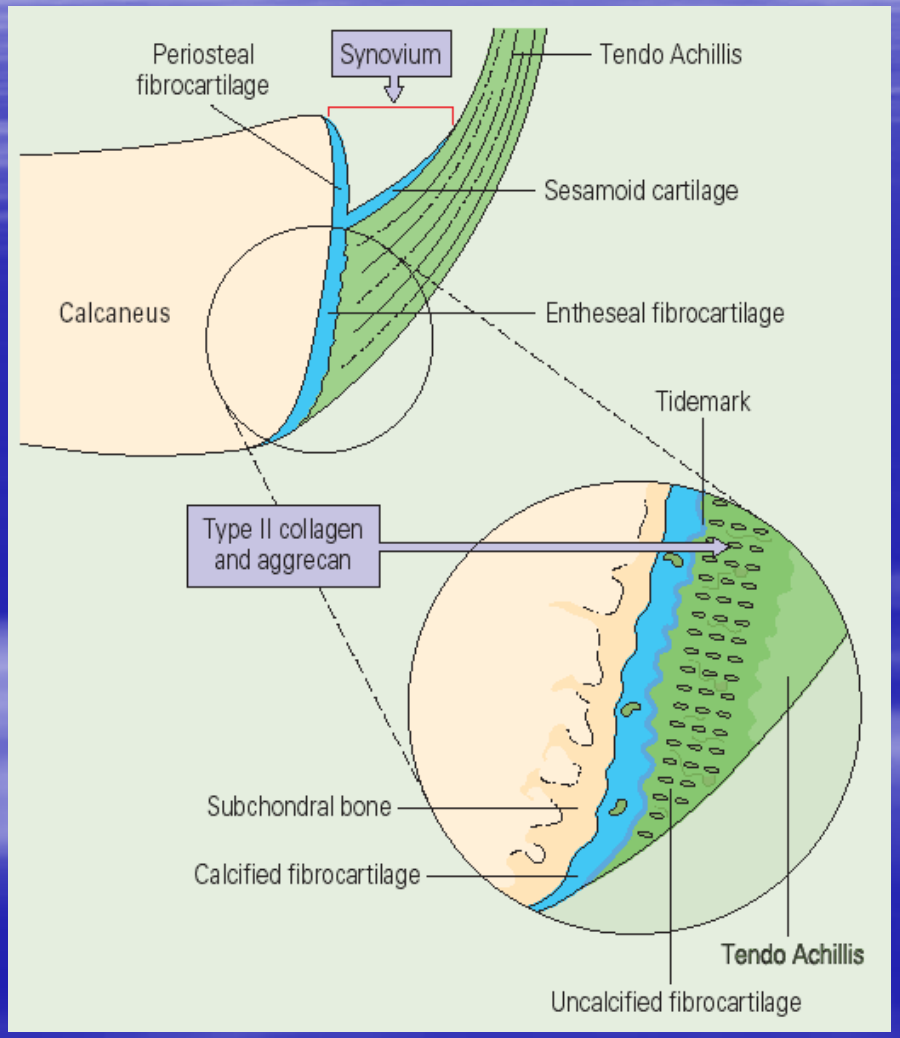
- **Entesopatia** : ogni modificazione patologica di una entesi
- **Entesite** : ogni modificazione infiammatoria di una entesi

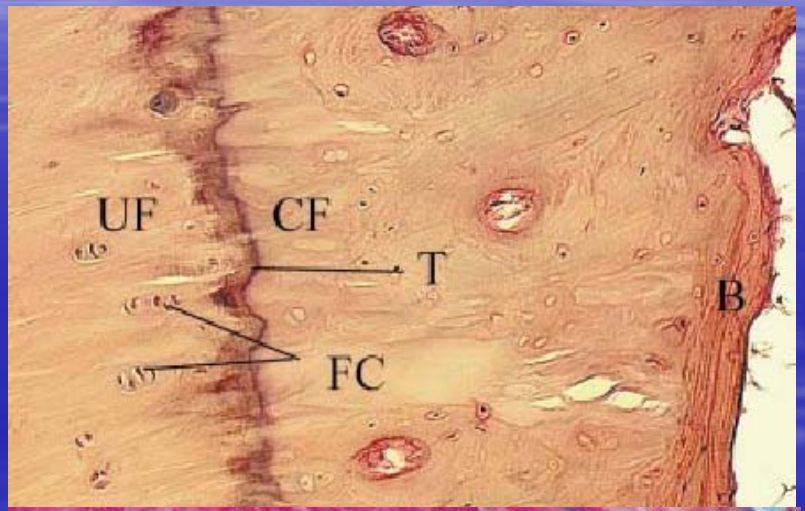
Cosa è l'entesi

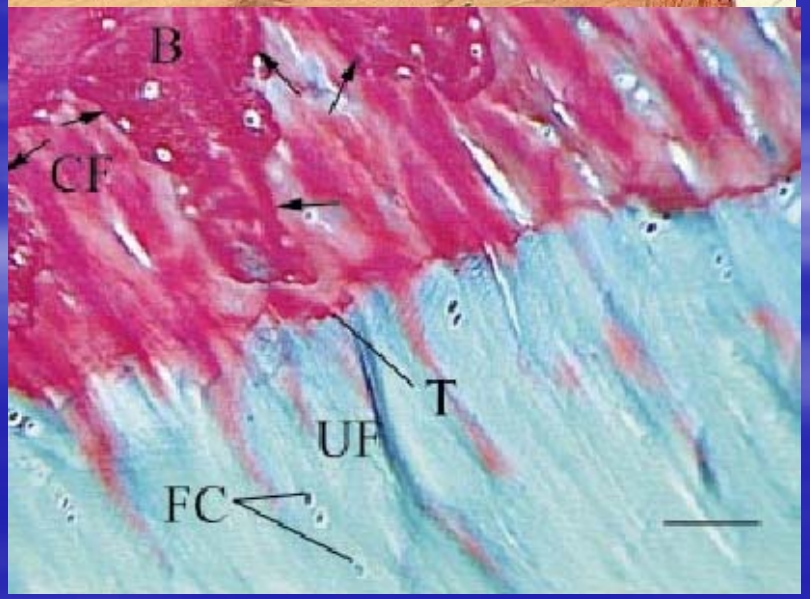
- Il luogo di inserzione di un tendine, ligamento, capsula o fascia nell'osso

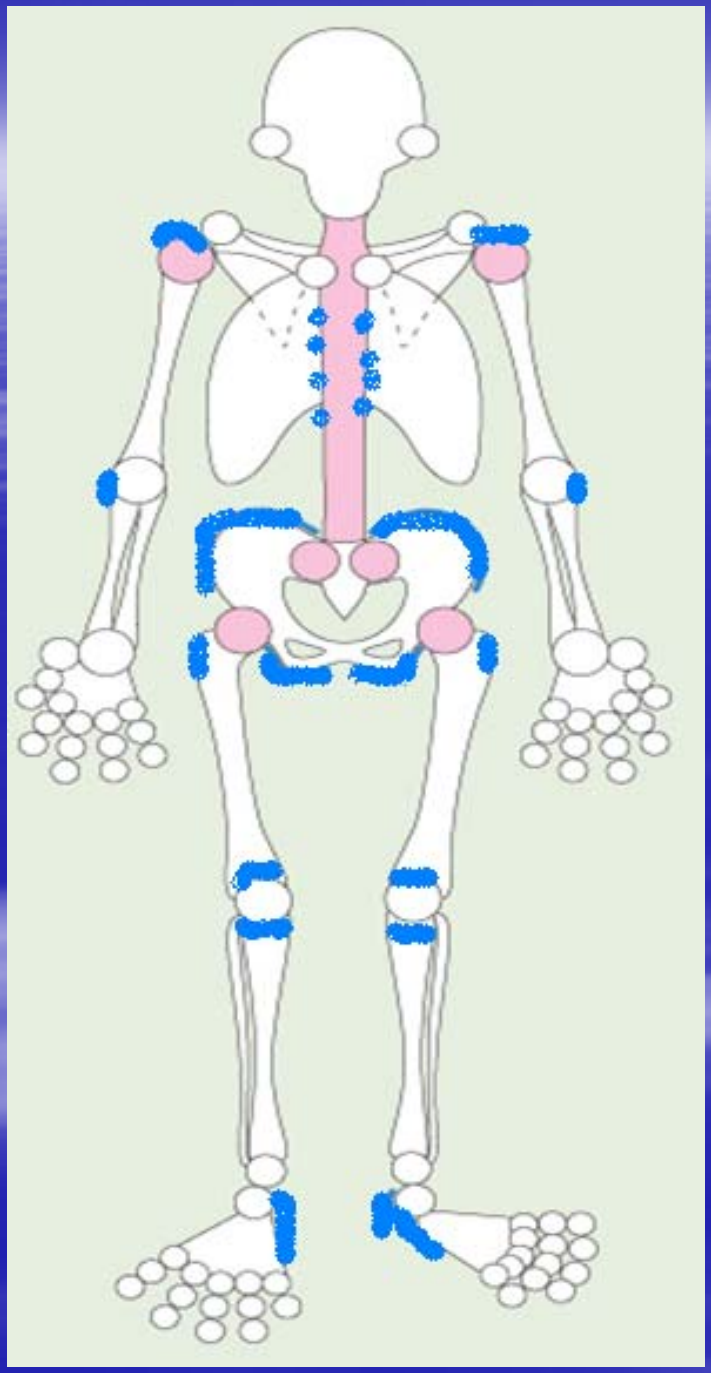
Tendinite ed entesite achillea

Schema struttura anatomica dell'entesi









Aree di coinvolgimento scheletrico nelle SpA

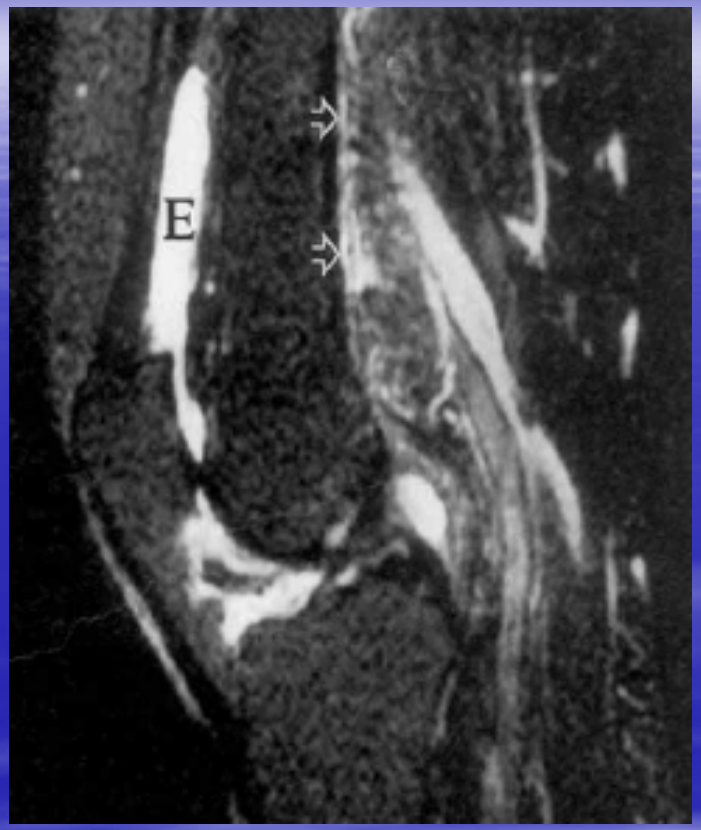
Articolazioni

Entesi

Rilevanza dell'entesite nelle SpA

- Sebbene l'entesite achillea o della fascia plantare sia una manifestazione clinica ben riconosciuta edlle spondiliti fino alla fine degli anni '90 era considerata indipendente dalle altre manifestazioni cliniche delle spondiliti come la sinovite, la sacro-ileite o l'osteite (Calin& Taurog, 1998).
- McGonagle et al. (1998) hanno potuto dimostrare con l'impiego della RM che l'entesite è comune nelle articolazioni sinoviali delle SPA
- Inoltre è associata ad una diffusa osteite del'osso immediatamante adiacente sugerendo come l'etesite òpossa essere iil concetto uniiacante della SPA (McGonagle et al. 1998).

McGonagle, 1998



In conclusion, we have shown that SPA-related knee swelling that was clinically indistinguishable from RA was associated with a distinctive pattern of extracapsular and bone abnormalities on MRI that was maximal at entheseal insertions.

In **SPA,** enthesitis in synovial joints is infrequently recognized clinically, but when fat-suppression MR is used, abnormalities suggestive of enthesitis are frequent.

This has important implications for the mechanisms of synovitis in **SPA** and for a reclassification of inflammatory arthritis in general.

Classificazione delle malattie articolari infiammatorie (McGonagle,1996)

- Sinovitiche (AR)
- Entesitiche (SA)

L’entesite nelle SpA

- Ball per primo ha affermato che l’entesite è il segno patognomonico della SA (Ball J. Ann Rheum Dis 1971, 30:213–223).
- L’ipotesi entesitica è stata poi estesa a tutte le SpA (Paolaggi JB, et al. Rev Rhum Mal Osteoartic 1984, 51:451–456, Gaucher A, et al. Presse Med 1986, 15:623–624, McGonagle D, et al.Arthritis Rheum 1998, 41:694–700).
- E’ stato anche affermato che la sinovite delle SpA sia una conseguenza della entesite adiacente (McGonagle D, Gibbon W, Emery P. Lancet 1998, 353:1137–1140).

Caratteristiche cliniche

- **Segno della entesite periferica è il dolore**
- **Può essere però asintomatica**
- **Può essere dimostrata solo con l'imaging tipo gli ultrasuoni (US), specie se combinati con il power-Doppler, dalla radiologia convenzionale o dalla RM**

Caratteristiche cliniche

- **Il coinvolgimento delle entesi più superficiali (tendine achilleo, tendini patellari o epicondilo laterale del gomito) può essere associato ad una tumefazione sottocutanea ben evidente.**

Caratteristiche cliniche

- **Al contrario il coinvolgimento delle entesi situate più in profondità, come quelle della cresta iliaca, la sinfisi pubica, le tuberosità ischiatiche, il piccolo e grande trocantere dimostrano solo dolorabilità alla pressione e tumefazione palpabile.**
- **In questi casi quando la unica manifestazione clinica è il dolore è necessario escludere la presenza di una fibromialgia e documentare la eventuale presenza di entesite con metodiche di imaging.**

Caratteristiche cliniche

- Il dolore da entesite può essere molto intenso, disabilitante e continuo, in certi casi (era pre biologica) può durare diversi anni.
- Gester (2003) ha proposto dei criteri clinici per classificare l'entesite del calcagno
- La talalgia è considerata modesta quando il dolore è presente occasionalmente sotto carico, si risole rapidamente con il riposo ed è scatenato da una pressione moderata o marcata
- Viene invece classificata severa quando il dolore è sempre presente sotto carico, si riduce lentamente solo dopo riposo prolungato ed è scatenato da modesta pressione.

Caratteristiche cliniche

- **Spesso il dolore entesitico è massimo al carico dopo un periodo di riposo, specie al mattino al risveglio.**
- **E' molto intenso durante i primi movimenti e migliora con il cammino.**

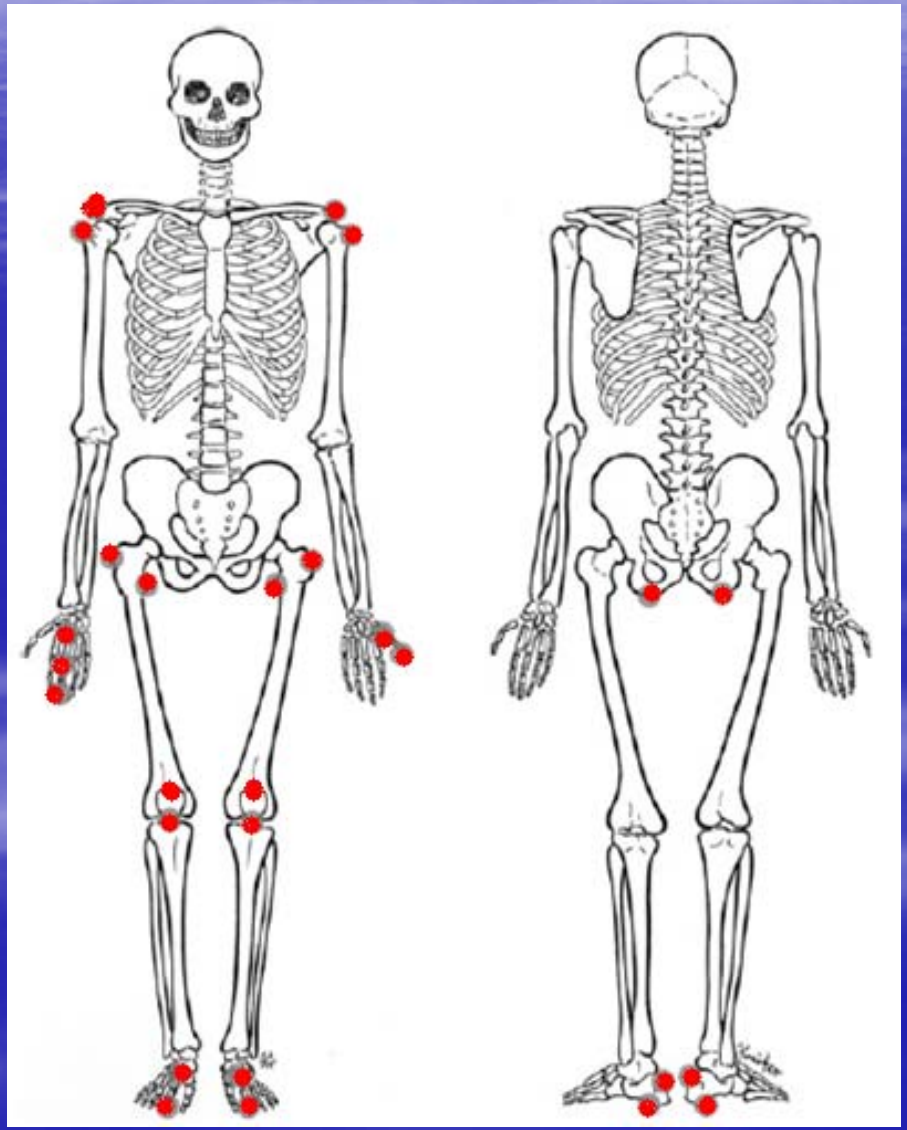
Epidemiologia entesite

- Peripheral enthesitis may be observed in all forms of SpA
- In all phases of disease evolution.
- Is particularly frequent in juvenile-onset SpA.
- In primary AS, the frequency of peripheral enthesitis has been found to be between 25 and 58%.
- Sometimes, especially in juvenile-onset forms, it precedes in association or not with peripheral arthritis spinal symptoms and radiological findings.

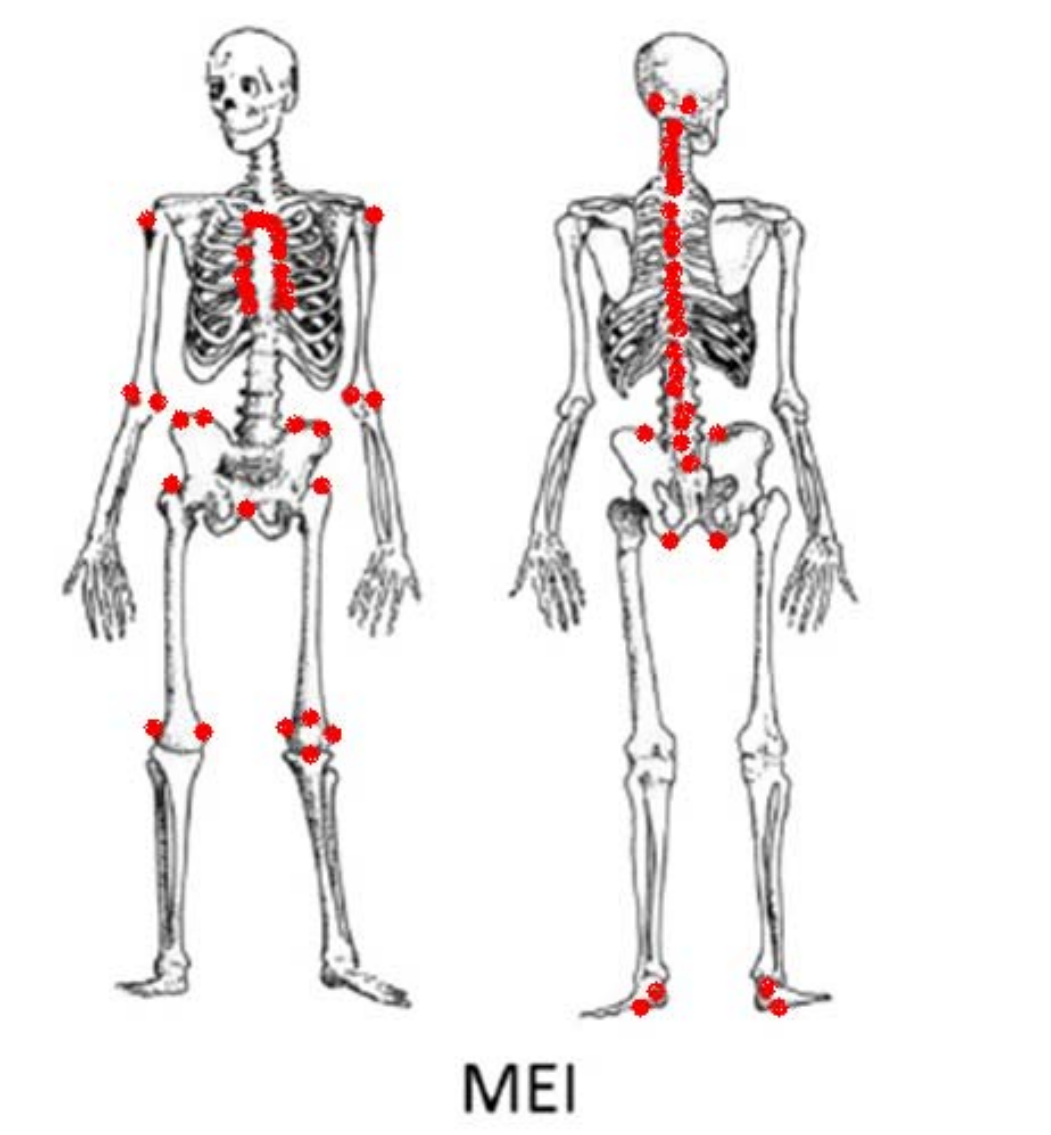
Valutazione clinica delle entesiti

- Anamnesi
- Esame obiettivo : ispezione delle entesi superficiali per tumefazione e arrossamento cutaneo, dolorabilità alla pressione nelle sedi anatomiche

Le sedi entesiche coinvolte più spesso nelle spondiliti (Eshed I., 2007)



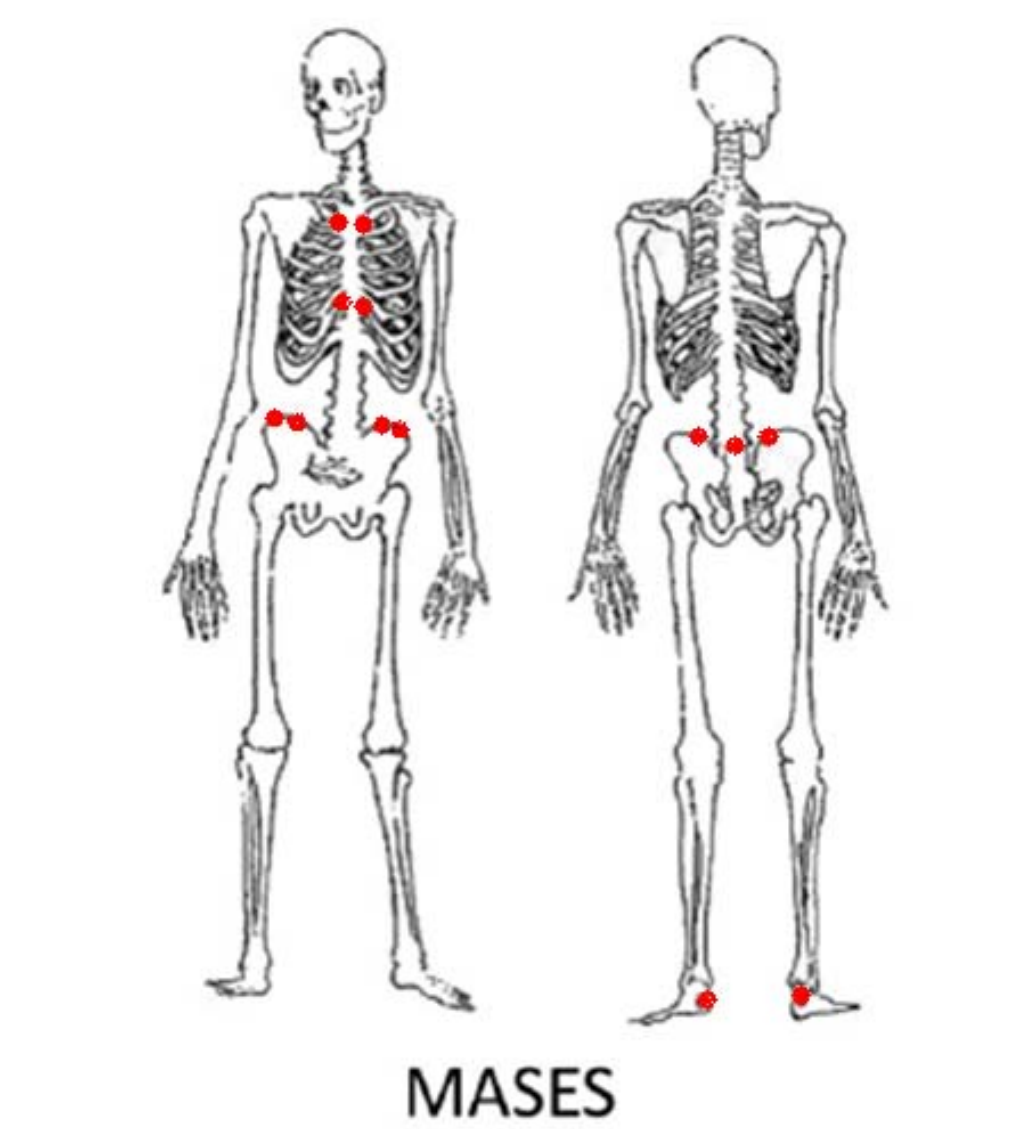
Valutazione clinica entesi: indici entesitici



Indice entesitico di Mander

Entesi valutate : 68
Per ogni entesi scala di dolore 0-3 :
0 (nessun dolore)
1 (dolore solo se richiesto)
2 (dolore spontaneo
3 (ritira l'arto)
Punteggio massimo : 204

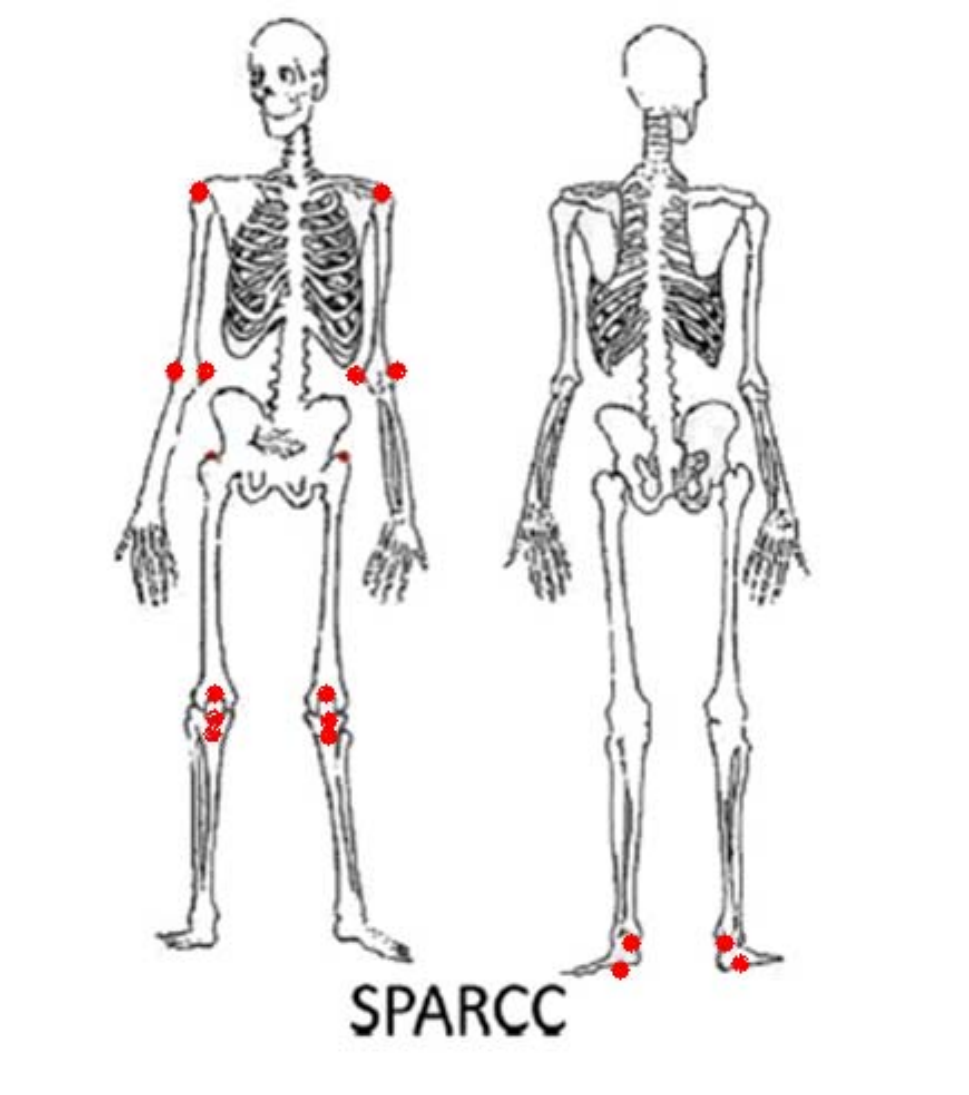
Valutazione clinica entesi: indici entesitici



Indice entesitico di Maastricht

Numero entesi valutate :13
Valore per ogni entesi 0-3
Valore massimo :39

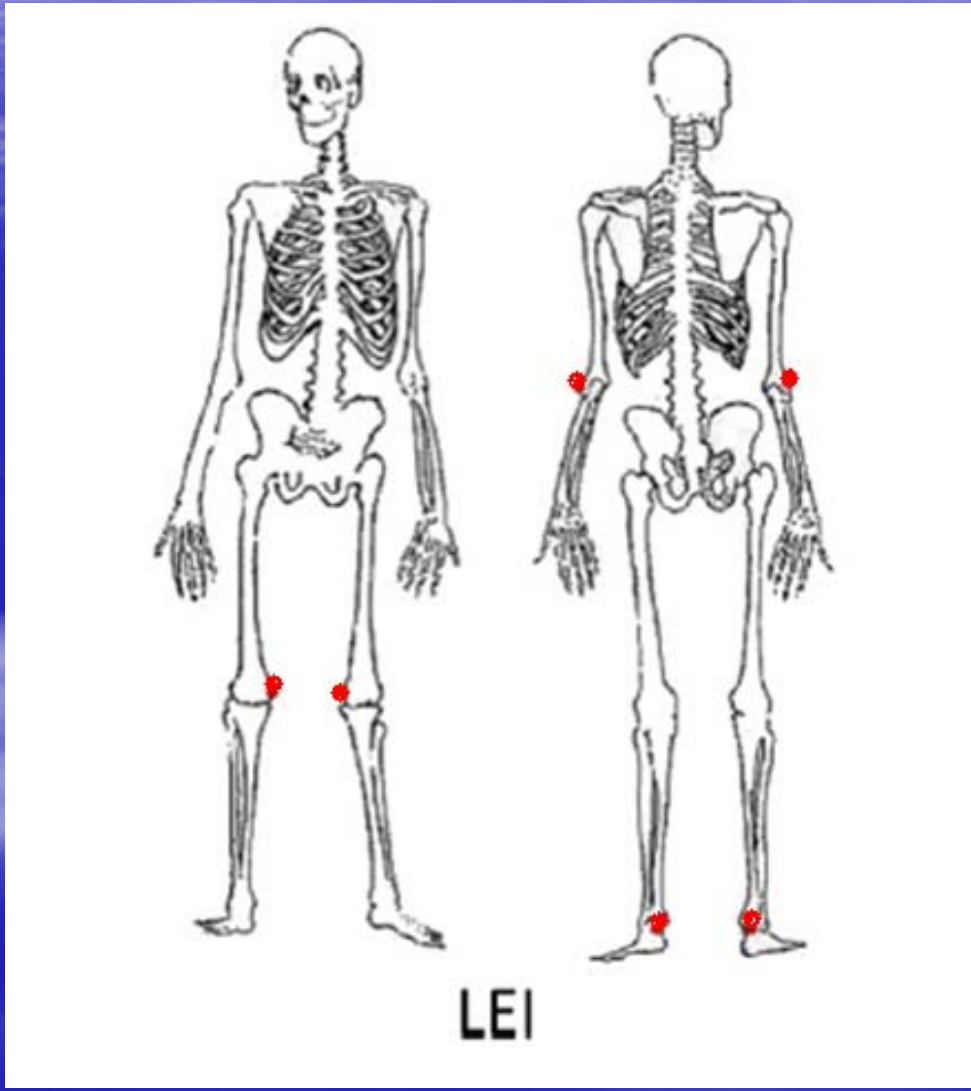
Valutazione clinica entesi: indici entesitici



SPARCC:
Spondyloarthritis Research Consortium of Canada Enthesitis Index

Numero entesi valutate :16
Punteggio massimo : 16

Valutazione clinica entesi: indici entesitici



Indice entesitico di Leeds

Numero entesi valutate : 6
Valore massimo : 6

Ruolo imaging nella valutazione entesi

- **Radiografia**
- MR
- Scintigrafia
- US
- PET

Valutazione radiologica delle entesi

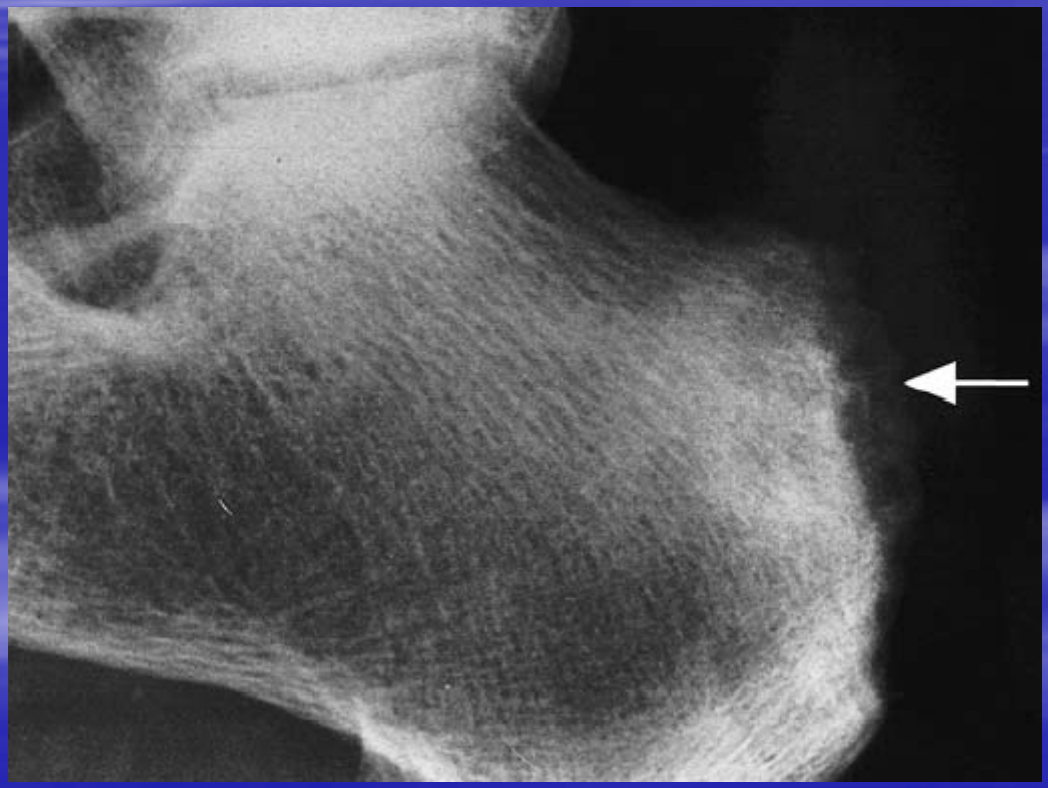
- Vantaggi
- Facile disponibilità
- Costo limitato
- Indagine standard
- Correla con il dato clinico
- Svantaggi
- Uso di radiazioni
- Scarsa sensibilità nelle lesioni iniziali
- Dimostra solo lesioni stabilizzate
- Non utilizzabile per la valutazione delle flogosi
- Poco utile nel follow-up

Valutazione radiologica delle entesi

LESIONI ELEMENTARI

- **Erosioni ossee**
- **entesofiti**
- **Ispessimento entesico.**

Rx entesi : erosioni e crescita ossea



Rx entesi : calcificazioni inserzionali (speroni calcaneali)

Joint Bone Spine xxx (2010) xxx–xxx

Available online at ScienceDirect www.sciencedirect.com

Elsevier Masson France EM|consulte www.em-consulte.com

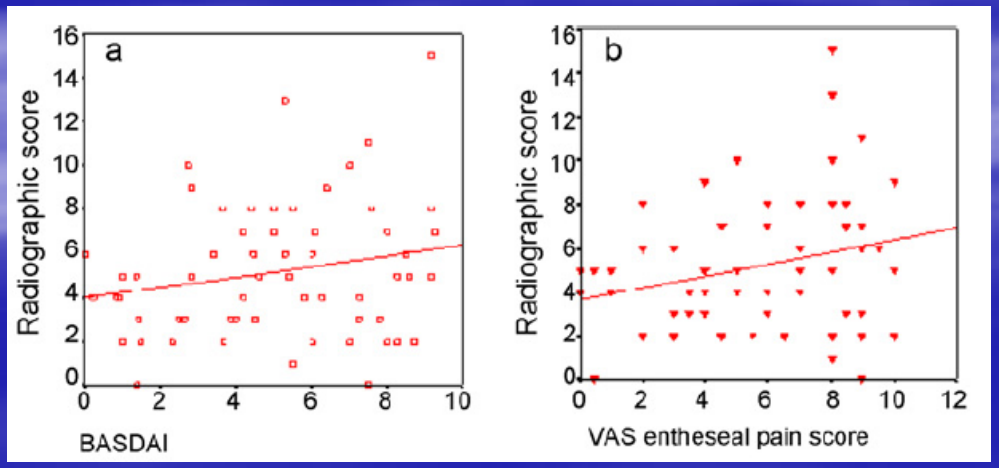
Original article

Correlations among clinical, radiographic, and sonographic scores for enthesitis in ankylosing spondylitis

Wafa Hamdi[a,*], Mouna Chelli-Bouaziz[b], Mohamed Salah Ahmed[b], Mohamed Mehdi Ghannouchi[a], Dhia Kaffel[a], Mohamed Fethi Ladeb[b], Mohamed Montacer Kchir[a]

Lateral radiographs of the knees and heels were obtained bilaterally and used to assess the following entheses:
patellar insertion of the quadriceps tendon,
proximal and distal insertions of the patellar tendon,
calcaneal insertions of the Achilles tendon and plantar fascia.
At each of the 10 entheseal sites, the following three radiographic criteria were recorded on a standardized form:
bony erosion,
enthesophyte,
entheseal thickening.

Each criterion was scored 1 if present and 0 if absent (range 0-30).



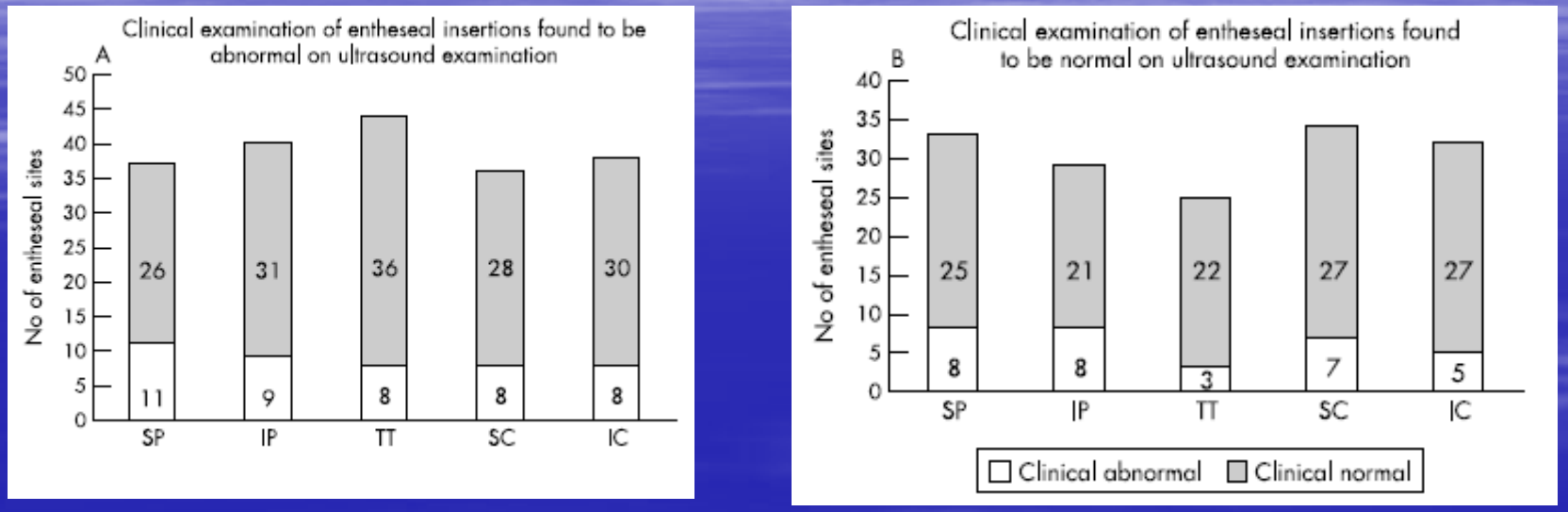
Ruolo imaging nella valutazione entesi

- Rx
- MR
- Scintigrafia
- **US**
- PET

Ultrasonography of entheseal insertions in the lower limb in spondyloarthropathy

P V Balint, D Kane, H Wilson, I B McInnes and R D Sturrock

Ann. Rheum. Dis 2002;61;905-910
doi:10.1136/ard.61.10.905



Correlation of clinical abnormality (either swollen or tender) with any US abnormality at entheseal sites in the lower limbs. SP, superior pole of the patella; IP, inferior pole of the patella; TT, tibial tuberosity; SC, superior pole of the calcaneus; IC, inferior pole of the calcaneus.

Most entheseal abnormality in SpA is not detected at clinical examination.

US is better than clinical examination in the detection of entheseal abnormality of the lower limbs in SpA.

ASAS criteria for spondylitis 2010

Sacroiliitis by MRI and/or X-ray (New York criteria) and one clinical criterion	HLA-B27 and two clinical criteria
Back pain (4/5 criteria)	Onset before 45 years of age Insidious onset Nocturnal pain that abates after arising Improves with exercise Does not improve with rest
Arthritis Enthesitis Uveitis Dactylitis Psoriasis Chronic inflammatory bowel disease (CIBD) Resolution or marked relief of the back pain within 24–48 h after the initiation of full-dose nonsteroidal anti-inflammatory drug therapy Family history of spondyloarthropathy (first- and second-degree relatives for ankylosing spondylitis, psoriasis, uveitis, reactive arthritis and CIBD)	

However, the inflammatory involvement of the entheses, a characteristic feature of SpA, is undervalued.
Peripheral enthesitis produces pain but may also be asymptomatic, and the clinical examination lacks sensitivity and specificity, as has been demonstrated by several studies comparing clinical evaluations with new imaging techniques.

Diagnostic accuracy of enthesis ultrasound in the diagnosis of early spondyloarthritis

Eugenio de Miguel, Santiago Muñoz-Fernández, Concepción Castillo, et al.

Ann Rheum Dis published online December 3, 2010
doi: 10.1136/ard.2010.134965

Table 1 Demographic data and results of the ultrasound score

	Controls	Spondyloarthritis patients
Subjects	57	113
Female/male	29/28	58/55
Age, years (mean±SD)	36.17±9.8	32.69±7.52
Age range, years	20–66	18–44
MASEI score (mean±SD)	12.26±6.85	23.36±11.40*
Male	14.20±7.61**	28.67±11.24*
Female	9.61±4.47**	18.32±9.09*
Ossification	7.29±2.86	9.73±4.79*
Structure	2.71±1.96	3.02±2.13
Thickness	0.94±1.03	0.79±1.28
Erosion	0.53±1.18	3.08±3.83*
Bursa	0.71±1.21	1.35±1.39
Doppler	0.18±0.72	5.38±6.17*

*p<0.01 between cases and controls and between spondyloarthritis men and women,
**p<0.5 between control men and women.
MASEI, Madrid Sonography Enthesitis Index.

113 early SpA patients were included (58 women/55 men), 57 non-infl ammatory control individuals (29 women/28 men) and 24 infl ammatory control individuals (11 women/13 men). The evolution time of SpA was 10.9±7.1 months. At least some grade of sacroiliitis on x-ray was present in 59 patients, but only five fulfilled the Rx sacroiliitis New York criteria. HLA-B27 was positive in 42% of patients. No statistical differences were found for the enthesis score among diagnostic SpA subtypes form of presentation (axial, peripheral or mixed) or HLA-B27 positivity.

The ultrasound score was 23.36±11.40 (mean±SD) in SpA patients and 12.26±6.85 and 16.04±9.94 in the non-inflammatory and inflammatory control groups (p<0.001), respectively.

The ROC AUC was 0.82, and a cut-off point of ≥20 points achieved a LH ratio of 5.30 and a specificity of 89.47%.

Entheses are affected early in spondyloarthritis, and the incidence of involvement is higher in men and independent of the spondyloarthritis diagnostic subtype, HLA-B27 status or presentation pattern.

The enthesis ultrasound score seems to have diagnostic accuracy and may be useful for improving the diagnostic accuracy of early spondyloarthritis.

ARTHRITIS & RHEUMATISM
Vol. 60, No. 7, July 2009, pp 1985–1990
DOI 10.1002/art.24636

Enthesis Inflammation in Recurrent Acute Anterior Uveitis Without Spondylarthritis

Santiago Muñoz-Fernández,[1] Eugenio de Miguel,[2] Tatiana Cobo-Ibáñez,[1] Rosario Madero,[2] Antonio Ferreira,[2] M. Ventura Hidalgo,[2] Armelle Schlincker,[2] and Emilio Martín-Mola[2]

- A blinded, controlled study of enthesis evident on (US) examination was performed in 100 patients and controls classified into 5 groups :
- 1. patients with confirmed SpA ,
- 2. patients with recurrent AAU who were positive for HLA–B27 and did not have SpA,
- 3. patients with recurrent AAU who were negative for HLA–B27 and did not have SpA,
- 4. patients with forms of uveitis other than those related to SpA,
- 5. healthy controls.

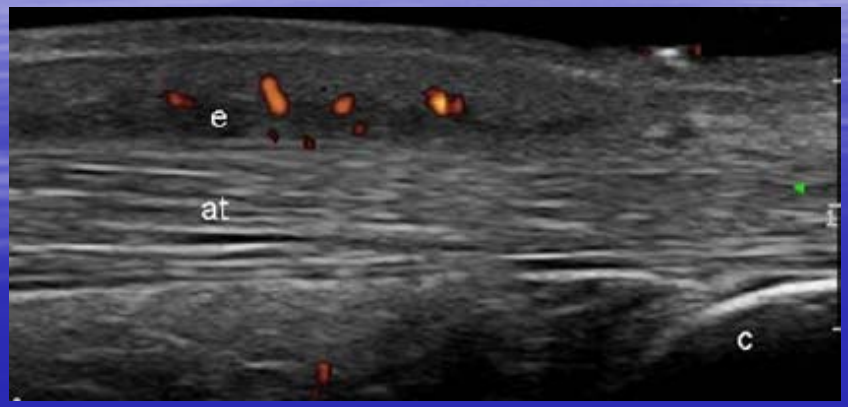
The MASEI cutoff limit was met or exceeded by 81%, 55.6%, 40%, 10%, and 19% of the subjects in the 5 groups, respectively.
The MASEI score was significantly higher in groups 1 and 2 than in groups 4 and 5.
The differences between groups 1 and 3 were also found to be significant.

A high percentage of HLA–B27+ patients with idiopathic recurrent AAU without features of SpA have enthesis lesions comparable with those seen in patients with SpA. Patients with recurrent AAU, especially those who are HLA–B27 positive, have an abortive or incomplete form of SpA.

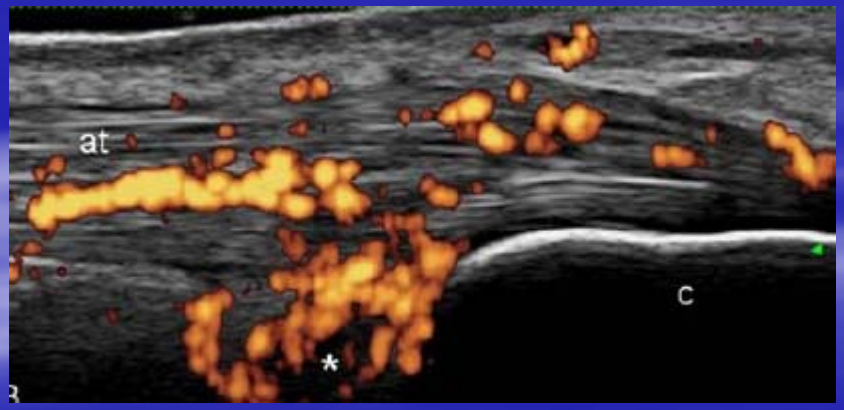
Lesioni ultrasonografiche elementari

- DEFINITION
- **Enthesis thickening and hypoechogenicity** are evaluated relative to the body of the tendon.
- **Calcific deposit** at the enthesis are hyperechoic spots or lines at the preinsertional area of the tendons, with or without acoustic shadowing, seen in 2 perpendicular planes.
- **Bone erosion** is a discontinuity of the entheseal bone surface, seen in 2 perpendicular planes.
- **Enthesophyte** is a hyperechoic prominence at the end of the entheseal bone contour, seen in 2 perpendicular planes.
- **Bursitis** is a well circumscribed hypoechoic or anechoic collection at the site of an anatomic bursa.

Ecografia tendine : lesioni elementari
Tendine achilleo

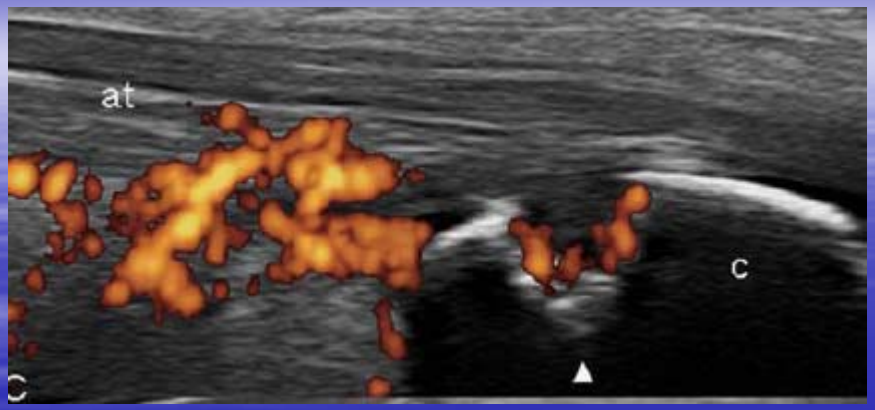


Achilles tendon. Longitudinal scan. Tendonitis. Note the hypoechogenicity of the structure of the tendon and the peritendineous oedema (e) with PD signal

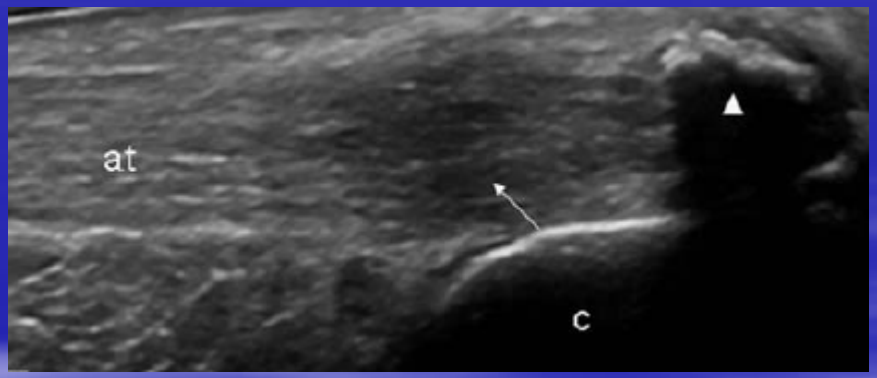


Achilles tendon. Longitudinal scan. Presence of hypoechogenicity of the tendon structure (due to intrafibrillar oedema) and retrocalcanear bursitis (asterisk), with intense PD signal. Note the integrity of the bone profile.

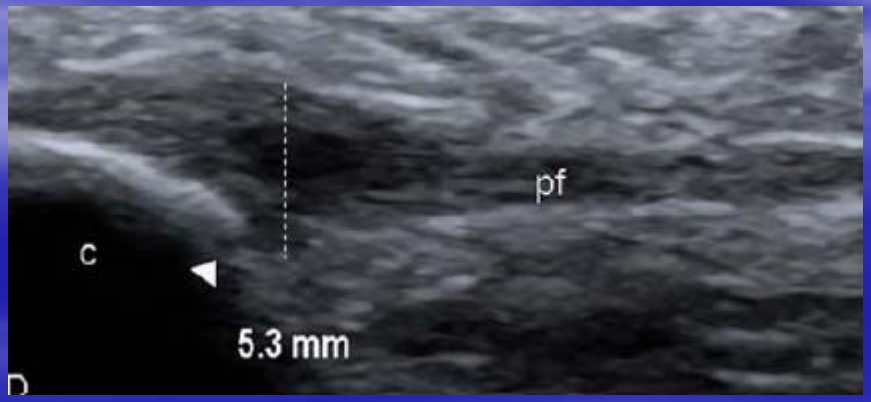
Ecografia tendine : lesioni elementari



Achilles tendon. Longitudinal scan. Large erosion of the calcaneous bone (arrowhead) with presence of PD within the tendon and inside the erosion.

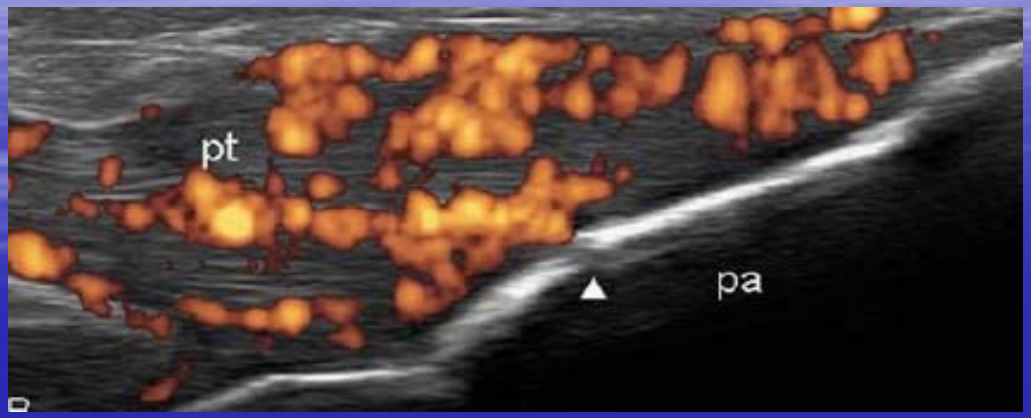


Large enthesophyte generating acoustic shadow which obstructs the complete visualization of the calcaneous bone (white arrowhead). Evident unhomogeneity of the structure of the tendon (arrow). The vertical white line indicates where measurements were taken.

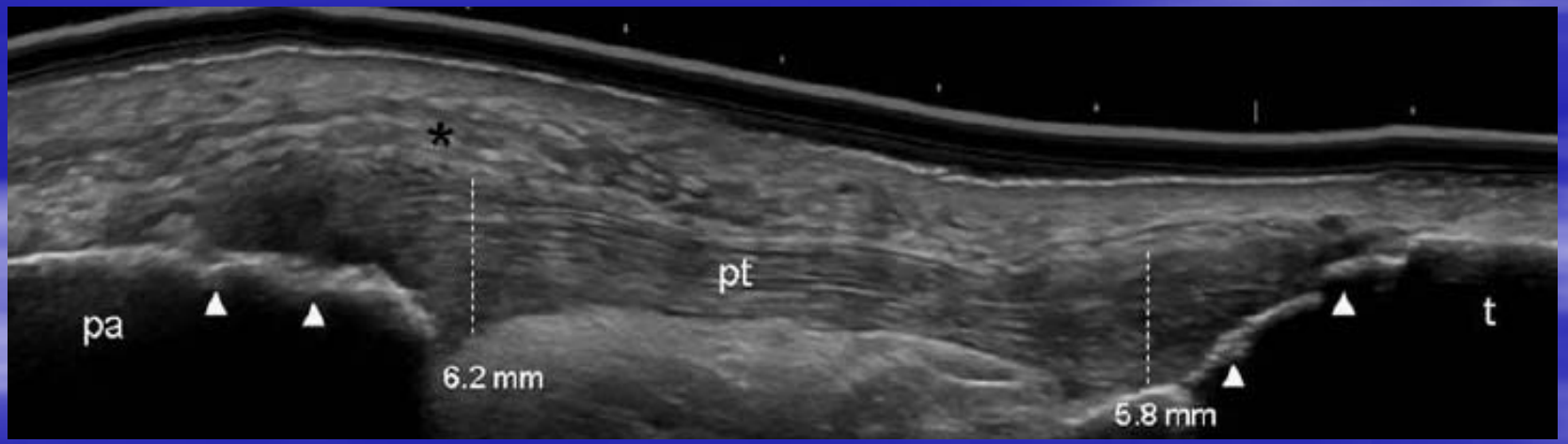


Plantar fascia. Longitudinal scan. Thickening of the insertion part of the plantar fascia with associated bone erosions (white arrowhead).

Ecografia tendine : lesioni elementari
Tendine sottorotuleo

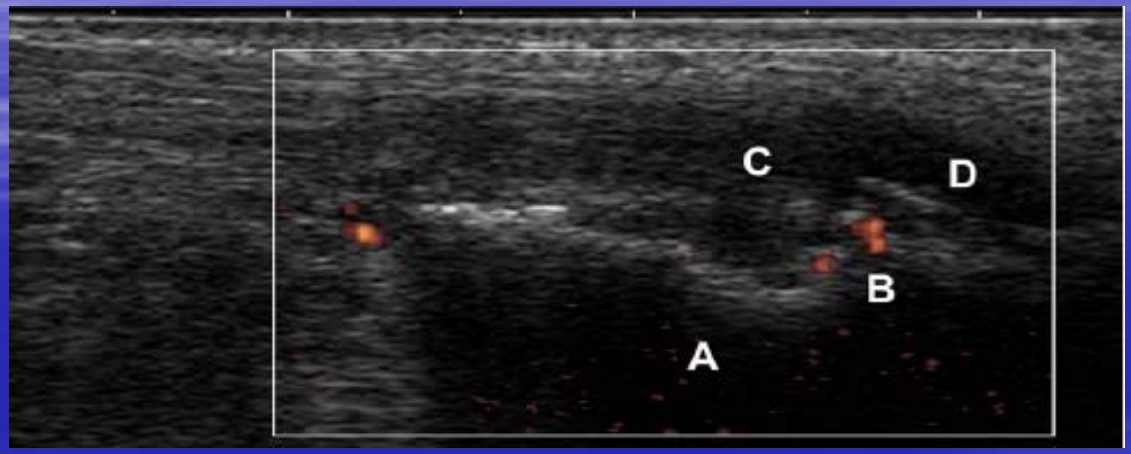


Distal patellar enthesis. Longitudinal scan. Marked hypoechogenicity and fibrillar separation (due to intratendioneous oedema), generating an increase of the thickness of the enthesis. Note the intense power Doppler signal and the erosion of the cortical bone (white arrowhead) indicating the severity of the inflammatory process.

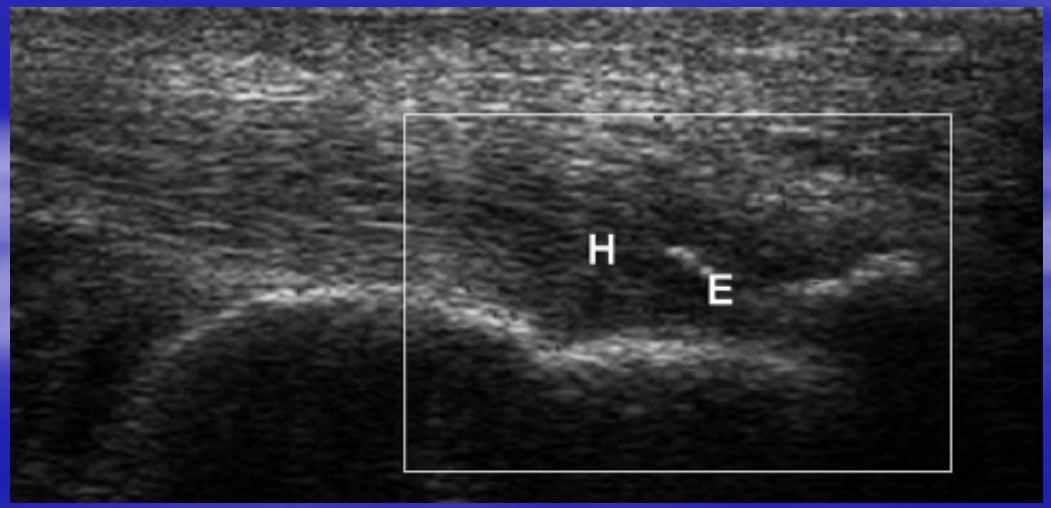


Patelar tendon using “extended view” technique. Longitudinal view. Thickening of both proximal (6.2 mm) and distal (5.8 mm) entheses of patellar tendon (pt) with evident echotexture disomogeneity, oedema of the peritendineous tissue (black asterisk), and irregularities of the bone profile (white arrowheads).

Ecografia tendine : lesioni elementari
Tendine achilleo

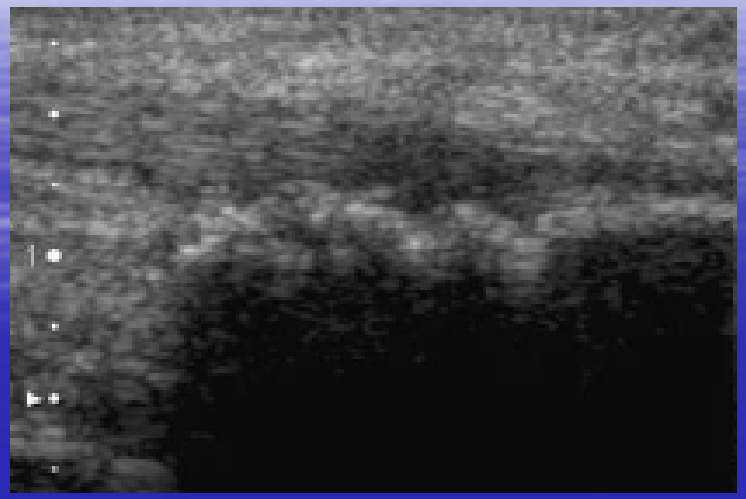


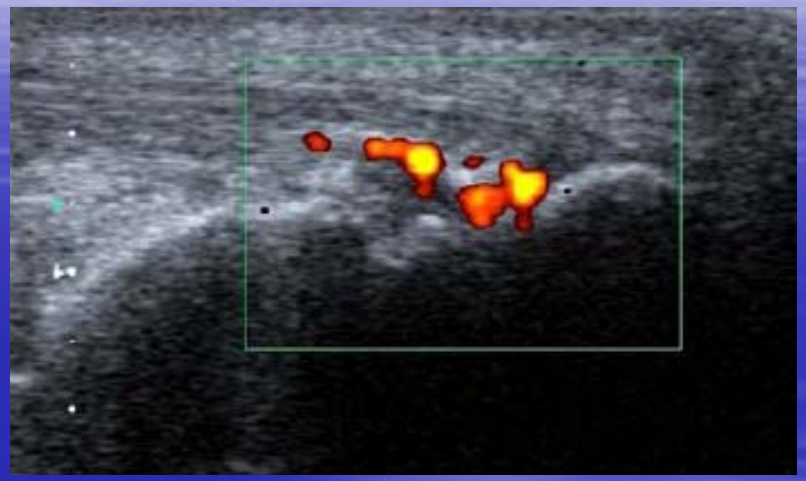
US appearance of grey-scale and PD enthesitis of Achilles tendon enthesitis in a longitudinal scan: erosions (A), PD signal (B); Hypoechogenicity and incresead of thickness (C), enthesophites (D).

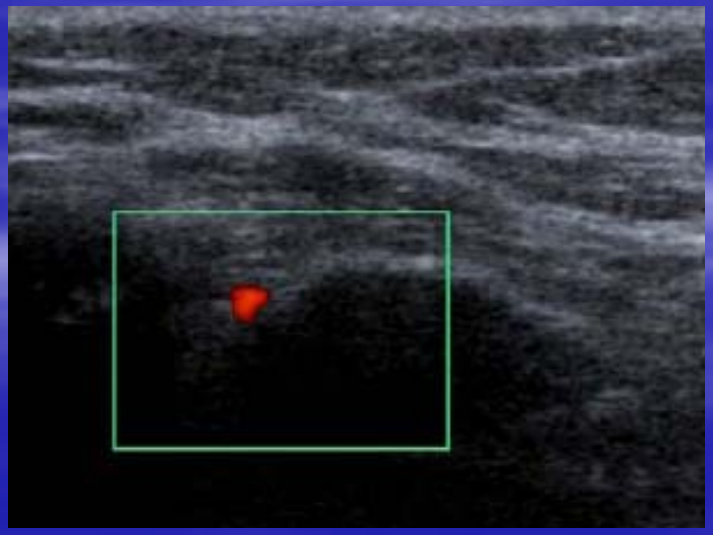


US appearance of grey-scale enthesitis of Achilles tendon enthesitis in a longitudinal scan. Enthesophytes (E) and hypoechogenicity (H).

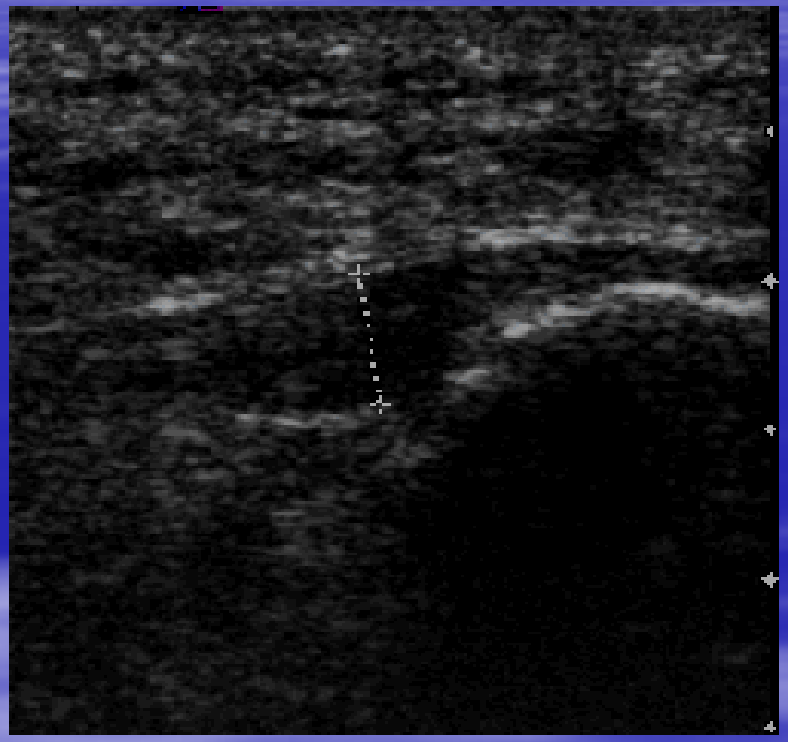
Ecografia tendine : lesioni elementari
Tendine achilleo

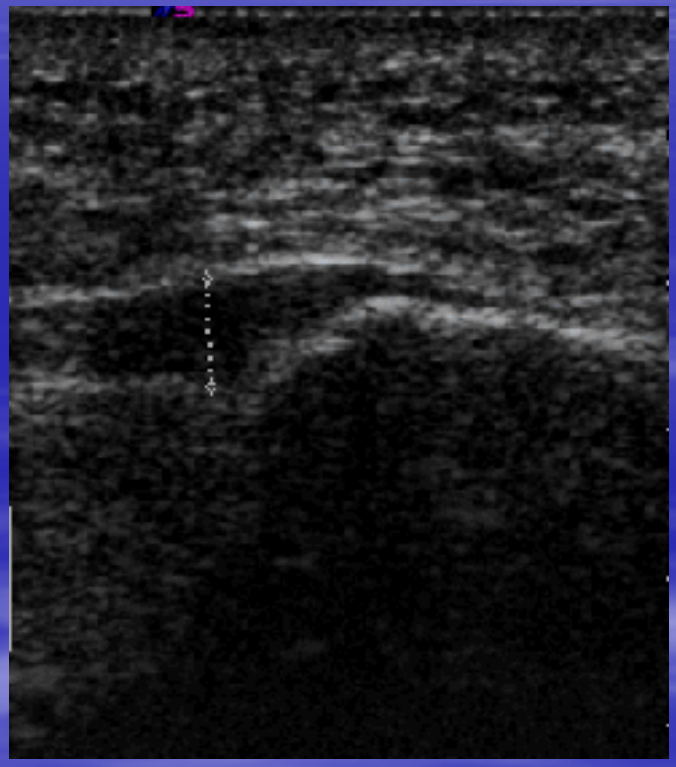




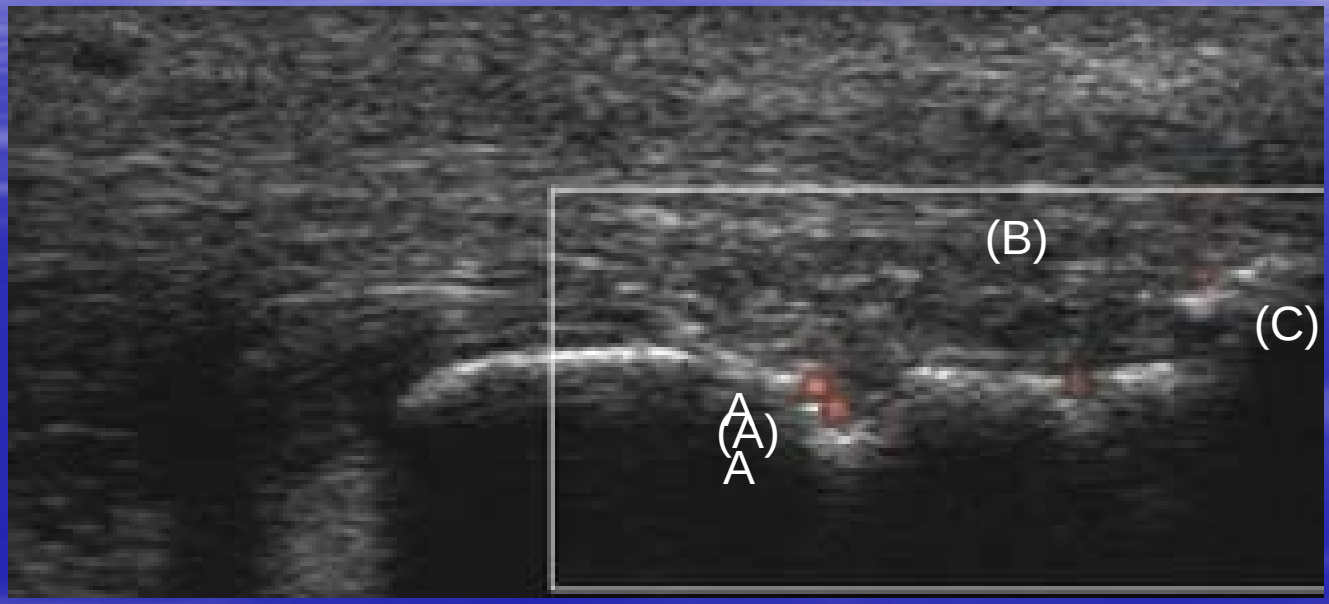


Ecografia tendine : lesioni elementari
Fascia plantare





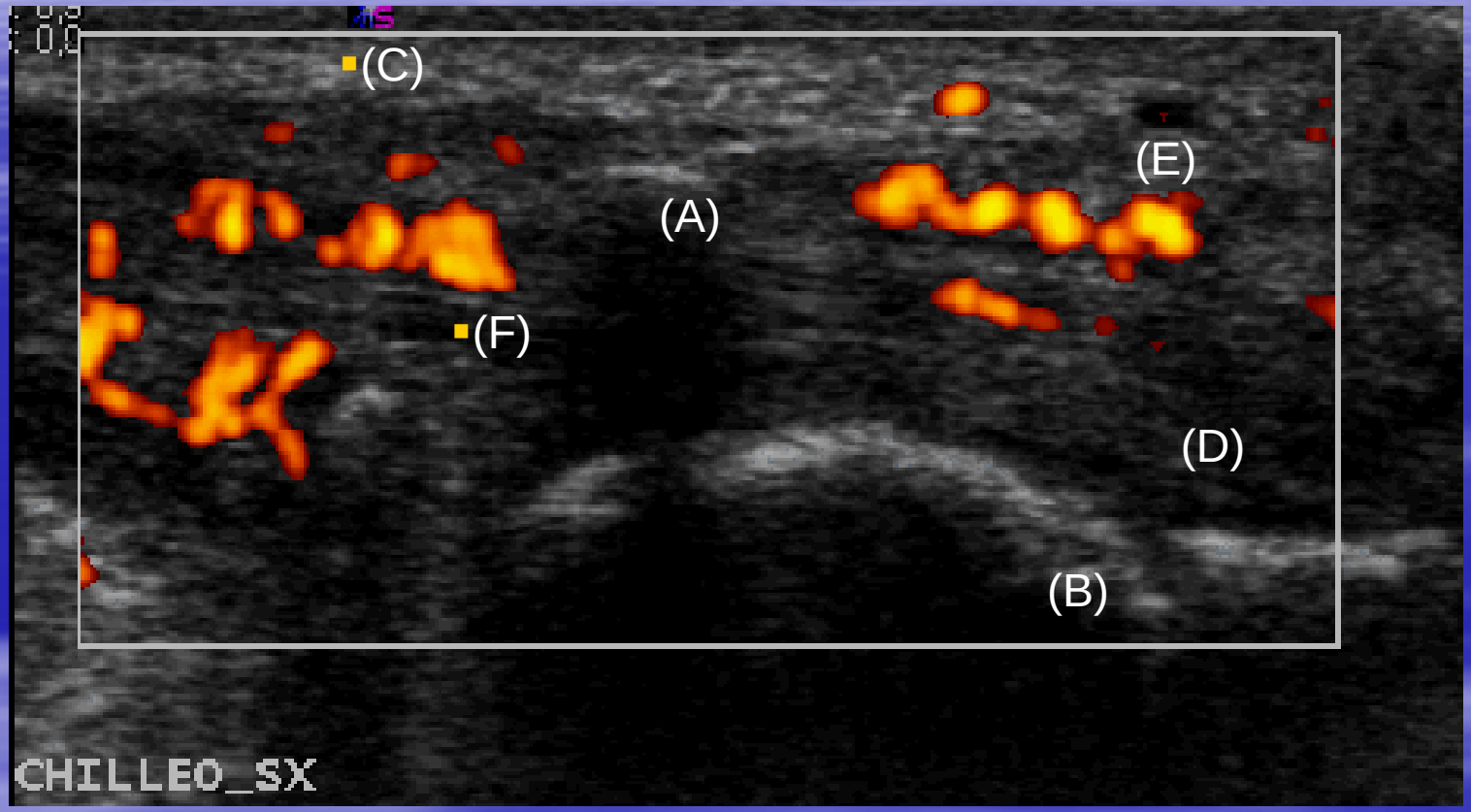
Ecografia tendine : lesioni elementari
Tendine ACHILLEO



A : Erosione con segnale Doppler
B: Ridotta ecogenicità
C: Entesofita con segnale Doppler

Lesioni US elementari.

Tendine achilleo in sezione longitudinale.



- A. Calcificazione intratendinea; B. Erosione; C. Edema peritendineo;
- D.Disomogeneità del tendine; E. Vascolarizzazione peritendinea;
- F. Vascolarizzazione intratendinea

Ruolo imaging nella valutazione entesi

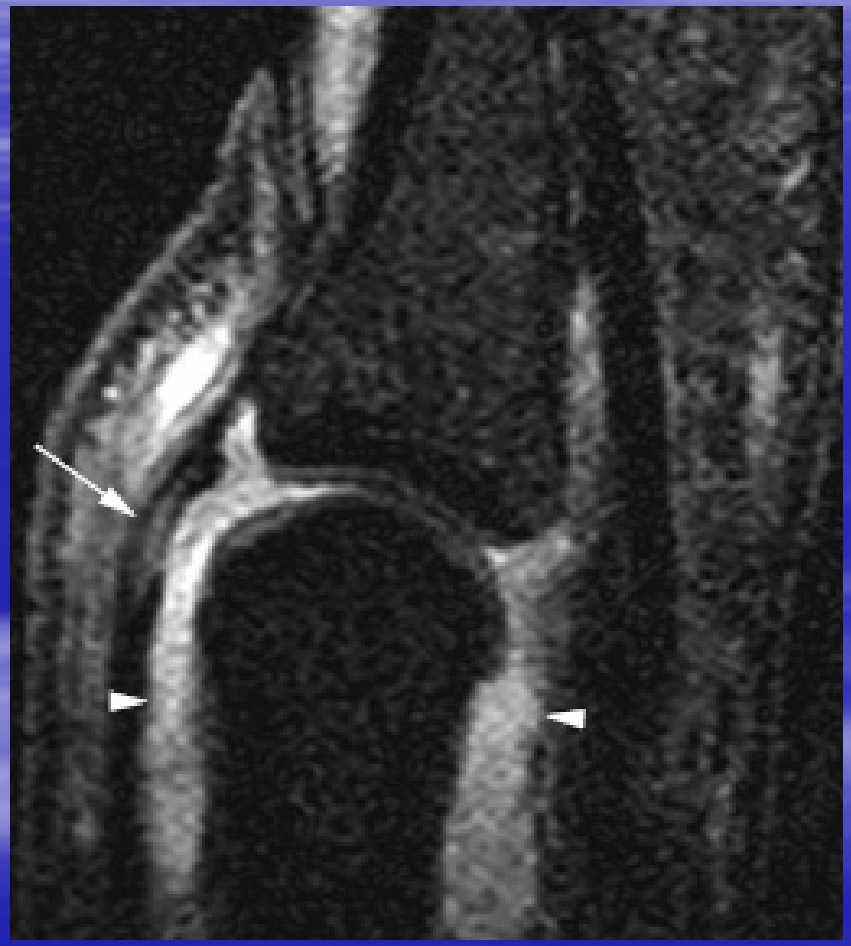
- Rx
- **MR**
- Scintigrafia
- US
- PET

Valutazione entesite in MRI

- The normal tendon on MR images has homogeneous low signal intensity in all sequences.

- When evaluating MR images for enthesitis one should evaluate:
- **thickness and signal intensity** of tendons and ligaments.
- **peri-enthesal soft tissues** for swelling or oedema.
- **adjacent bone marrow to detect oedema**, best appreciated as high signal in fat suppressed sequences.
- **adjacent bone for erosions** (cortical bone defects and contour irregularities) and **enthesophytes** (extensions of marrow contents isointense to the medullary bone), (best appreciated on T1-weighted sequences).
- additional findings in adjacent structures (**joint or bursal fluid** for example).

Entesite IFD

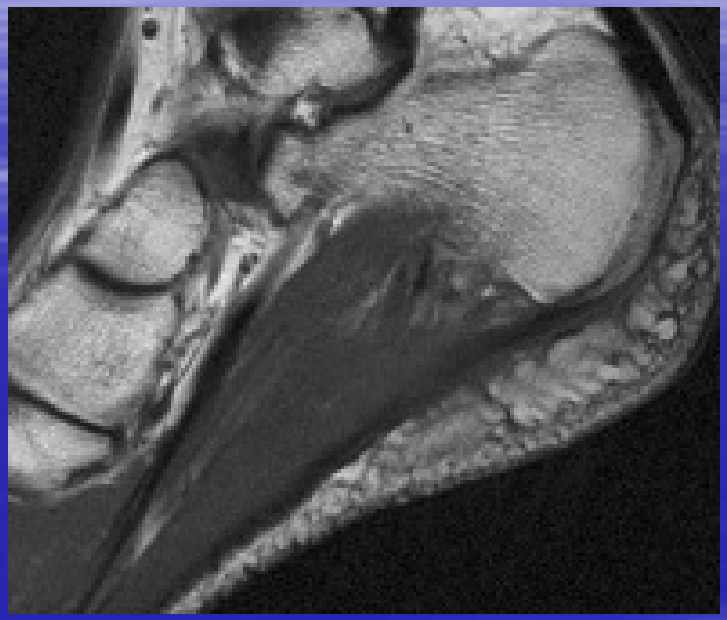


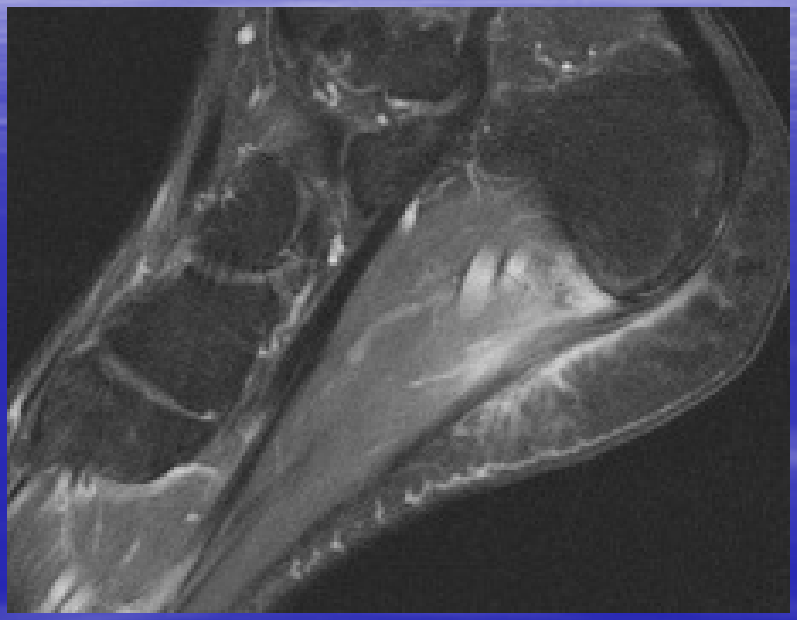
A 1.5 T sagittal T1-weighted fat-suppressed sequence after contrast injection using a high-resolution 23 mm diameter microscopy MRI coil shows increased signal of the extensor tendon (arrow) corresponding to a site at which fibrocartilage formation is known to occur within the fused extensor tendon–joint capsule.

Entesite IFD

A 1.5 T coronal high-resolution T1-weighted fat-suppressed sequence after contrast injection. The diffuse pattern of periarticular bone marrow oedema (arrows) as well as peri-entheseal soft tissue oedema (arrowheads) is seen.

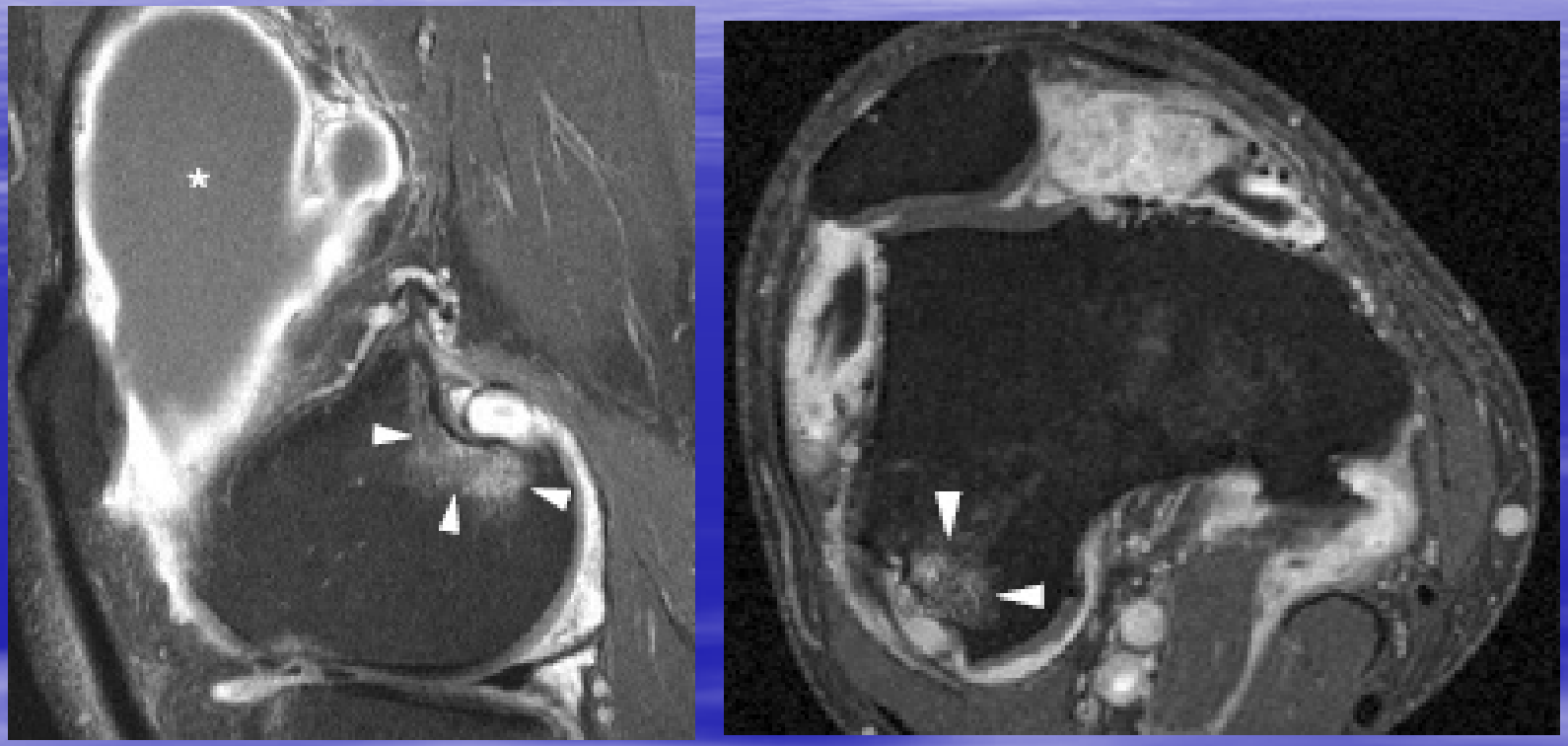
Plantar fasciitis





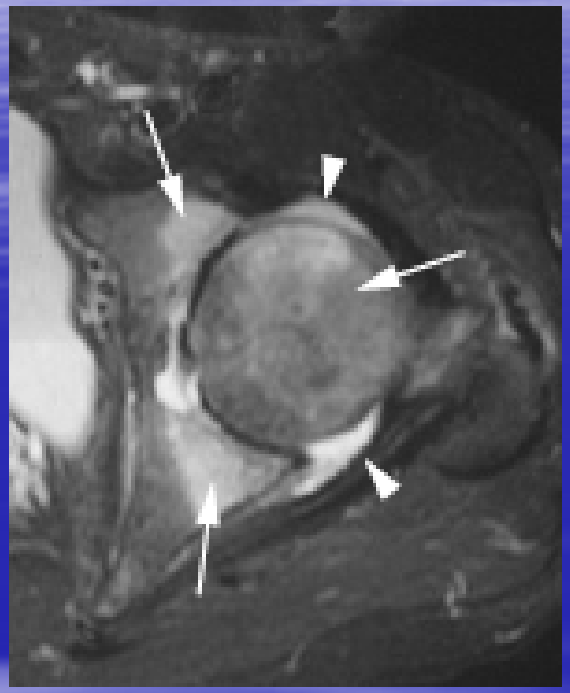
A 1.5 T sagittal T1-weighted sequence of the hindfoot shows a thickened plantar fascia with increased signal intensity.
A fat suppressed T1-weighted sequence after contrast injection shows enhancement of the plantar fascia, surrounding soft tissue oedema, and minimal calcaneal bone marrow oedema.

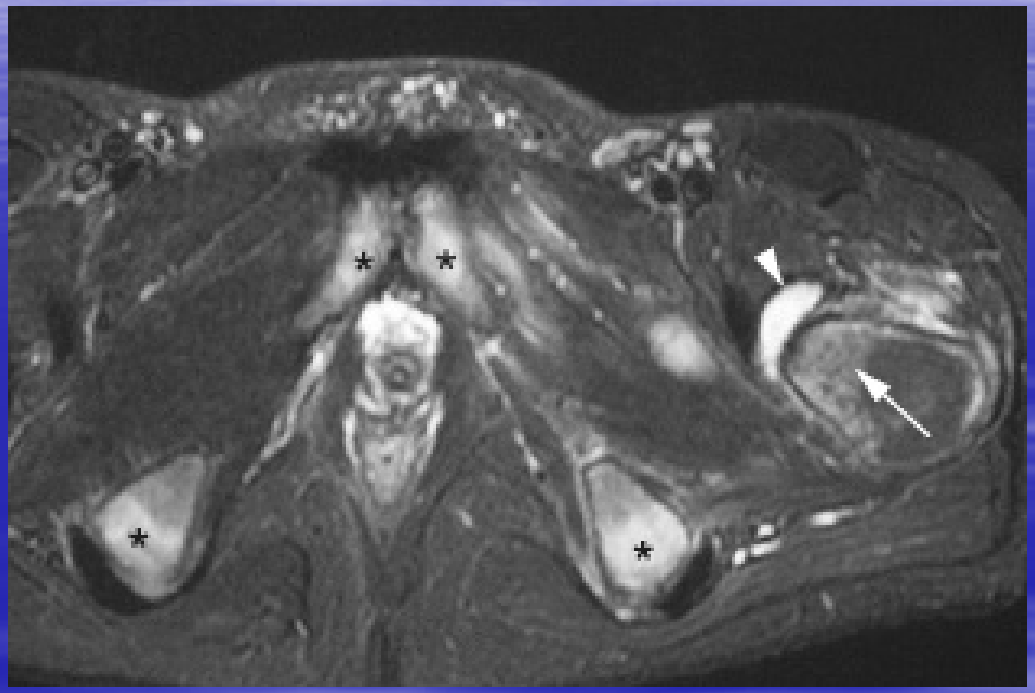
Entesite ginocchio



1.5 T sagittal and axial fat-suppressed T1-weighted sequences after contrast injection of the knee.
Localised bone marrow oedema at the posterior aspect of the lateral femoral condyle (arrowheads) at the insertion site of the lateral collateral ligament and the origins of the lateral head of the gastrocnemius and the popliteus muscles is depicted.

Entesite anca e bacino



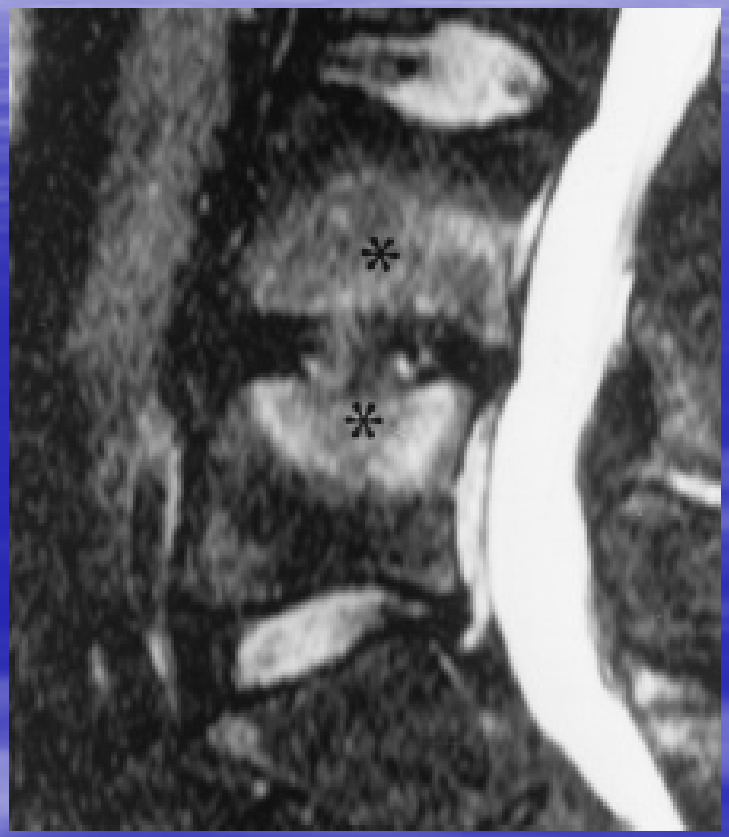


A 1.5 T transverse STIR sequence showing extensive bone marrow oedema (white arrows) in the femoral head and acetabulum as well as hip joint effusion (white arrowheads).
Same sequence more caudally shows bursitis (black arrowhead) and enthesis related bone marrow oedema at the lesser femoral trochanter (black arrow), ischial tubercles (white asterisks) and pubic bones (black asterisks).

RMN: lesioni elementari. Edema osseo.

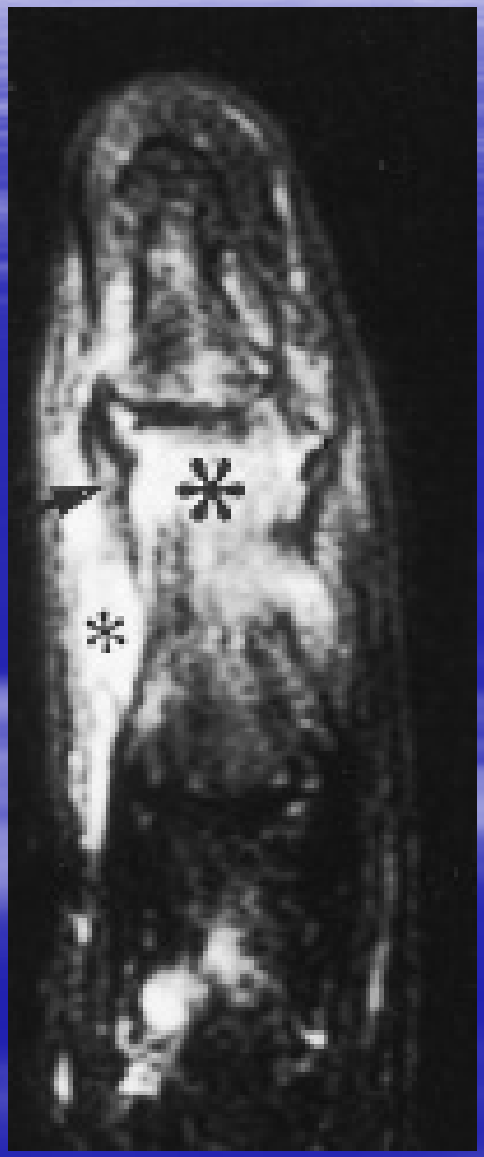
T2-weighted fat-suppressed (FS) coronal oblique magnetic resonance image of the sacroiliac (SI) joints of a patient with undifferentiated spondylarthropathy showing bone edema in the inferior aspect of the right SI joint (**white arrows).**

RMN: lesioni elementari. Edema osseo.



T2-weighted FS sagittal sequence of the lumbar spine showing end-plate edema of the L4 inferior and L5 superior vertebral bodies (**black asterisks).**

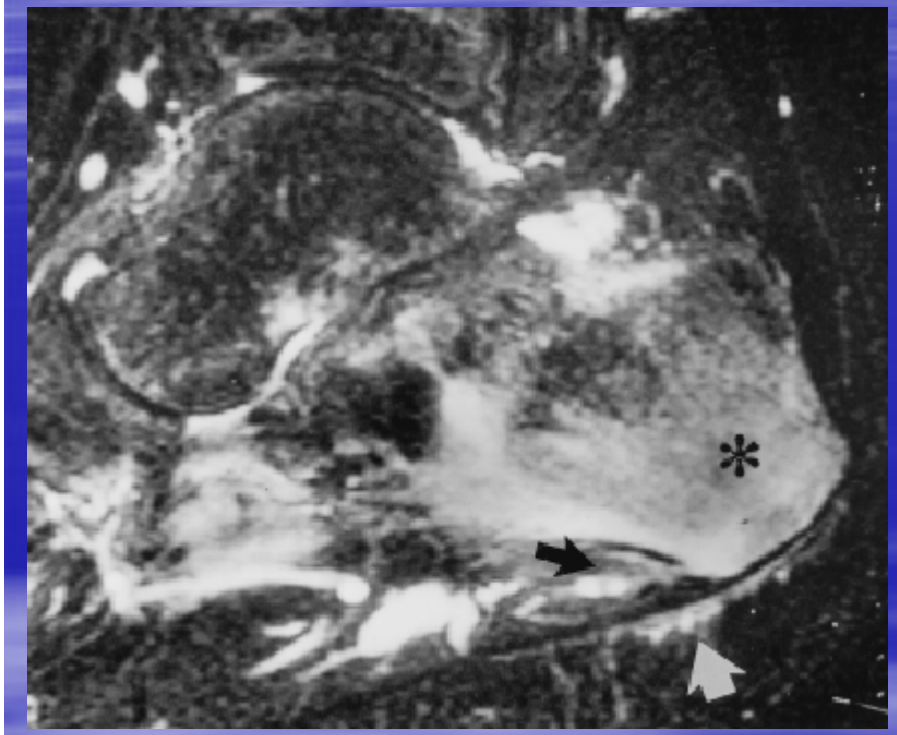
RMN: lesioni elementari. Edema osseo e flogosi tessuto perientesico.

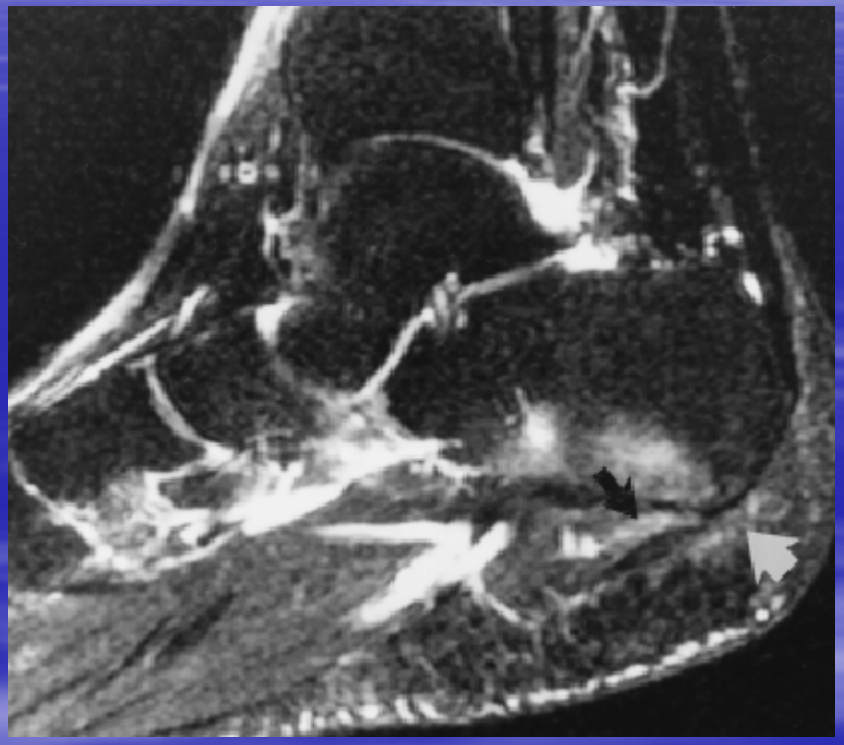


T1-weighted fat-suppressed post-gadolinium coronal sequence of the left second distal IP joint of a patient with SpA.

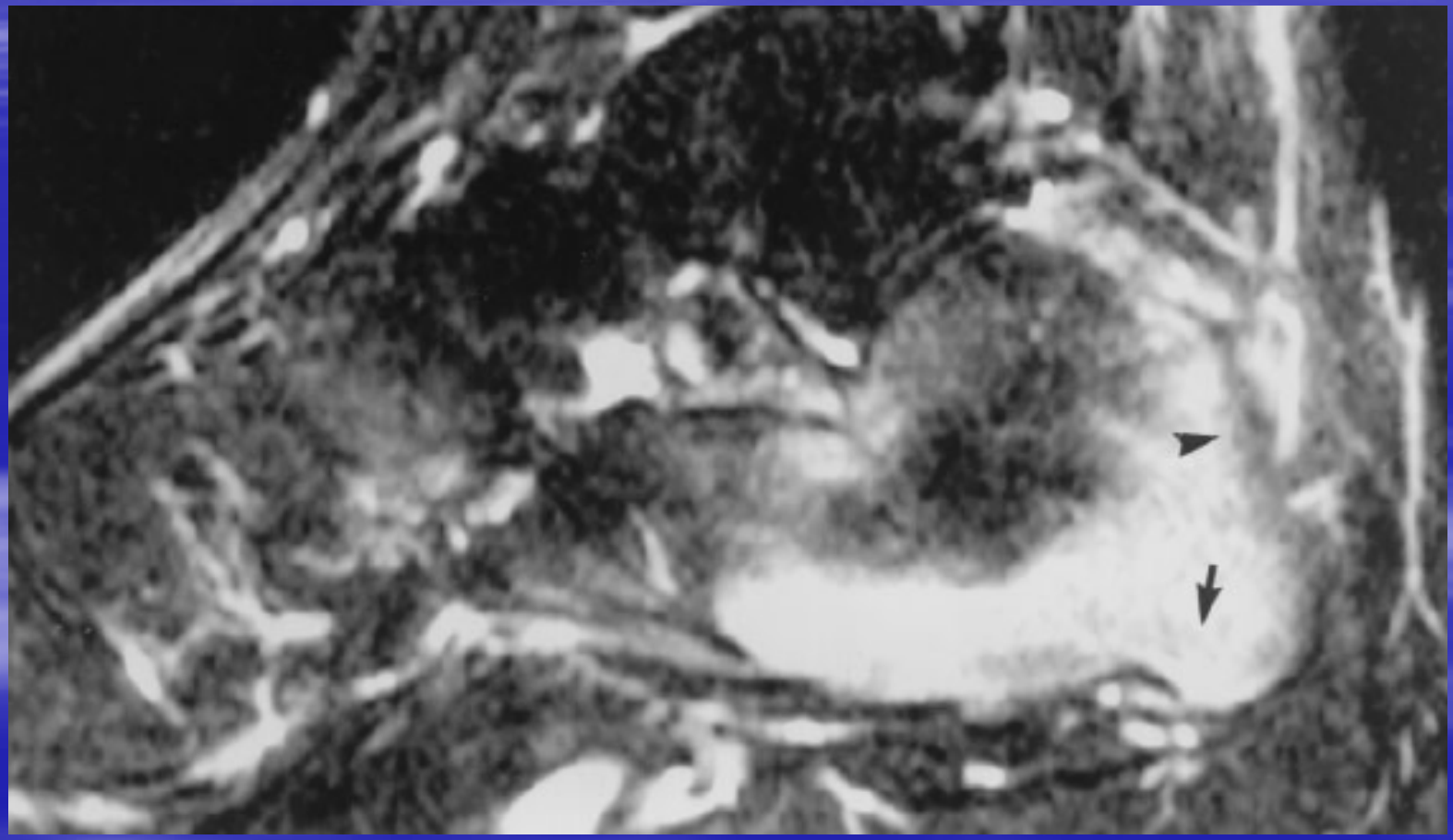
Extensive subcutaneous edema (small black asterisk)
bone marrow edema (large black asterisk)
and inflammatory change within the collateral ligament (black arrow).

RM : entesite del calcagno con coinvolgimento della fascia plantare

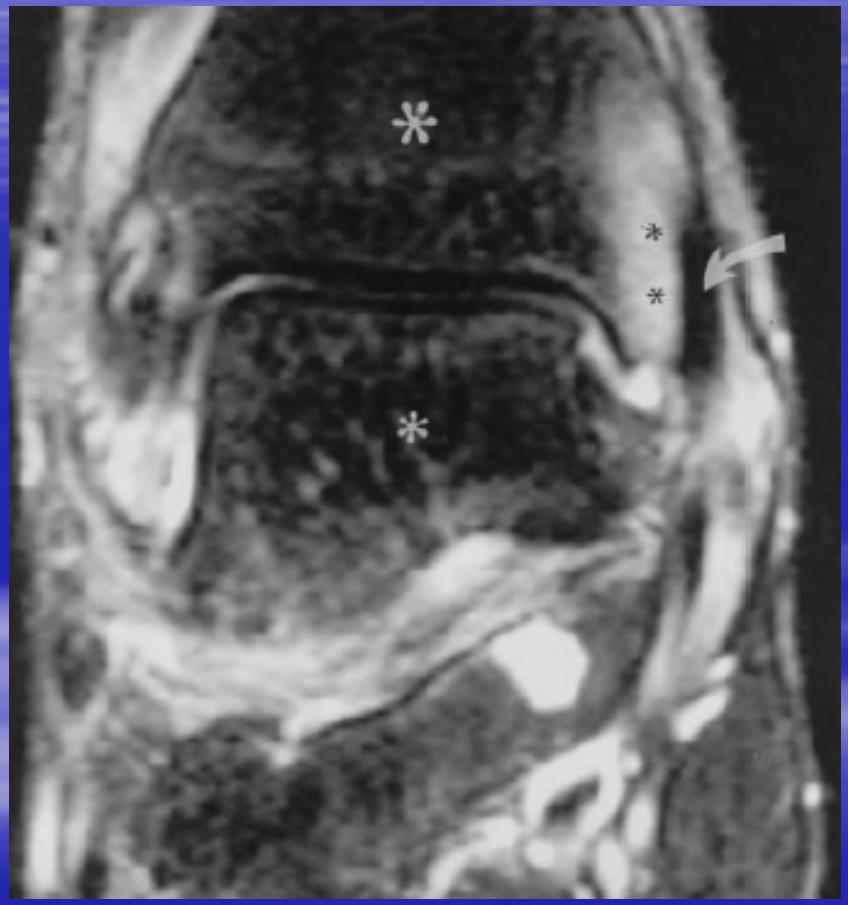


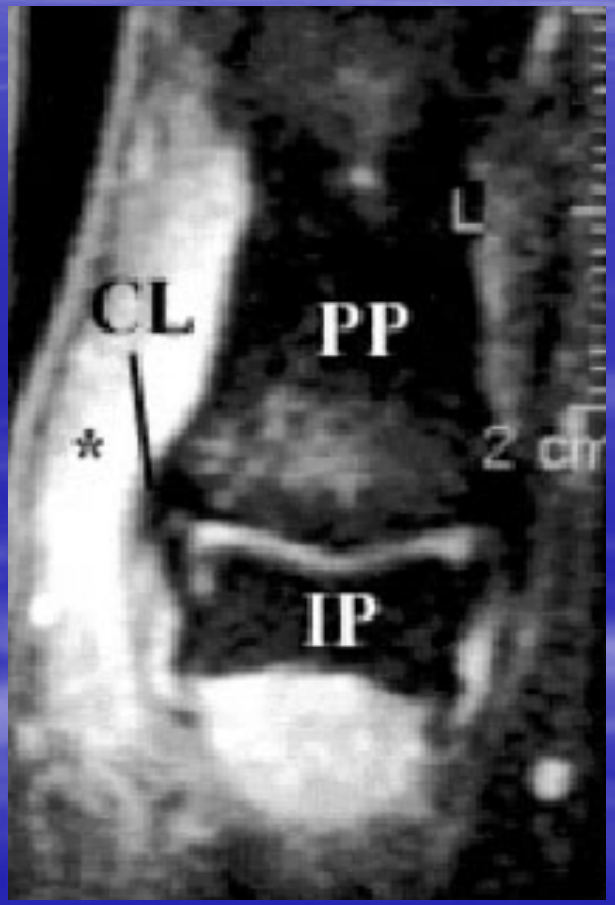


RM : entesite della fascia plantare e dell’achilleo

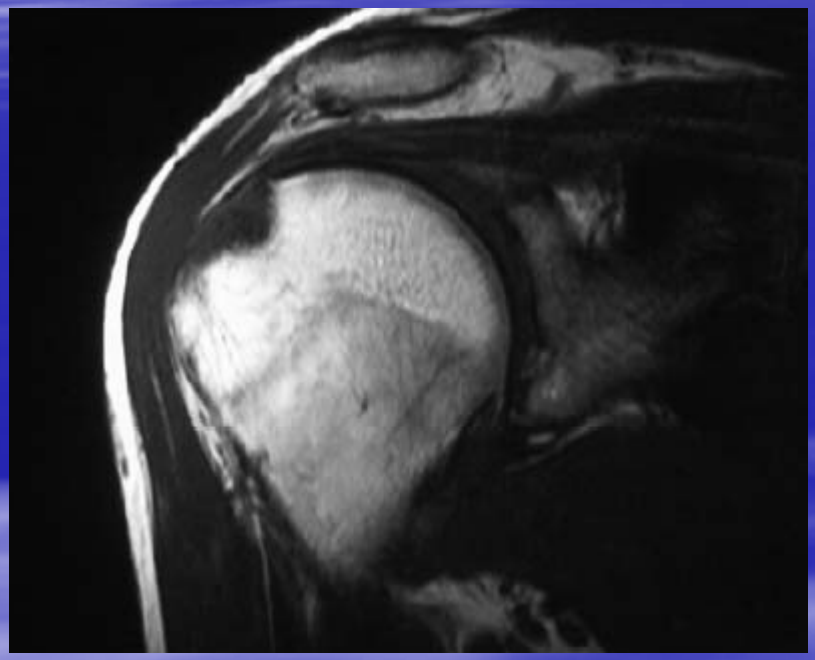


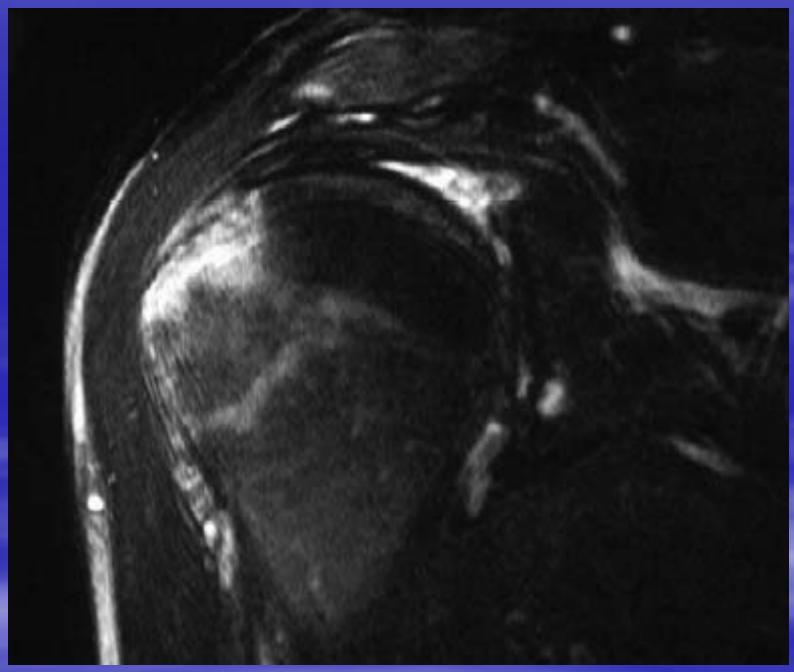
RM : entesite della caviglia e della IFP





RM : entesite della inserzione sovraspinato



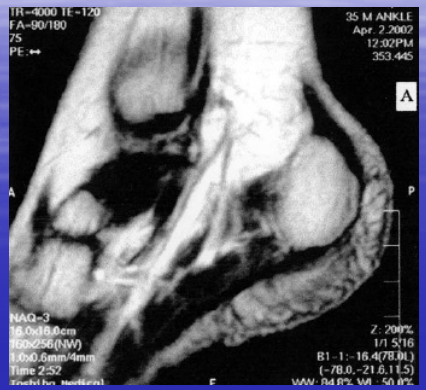


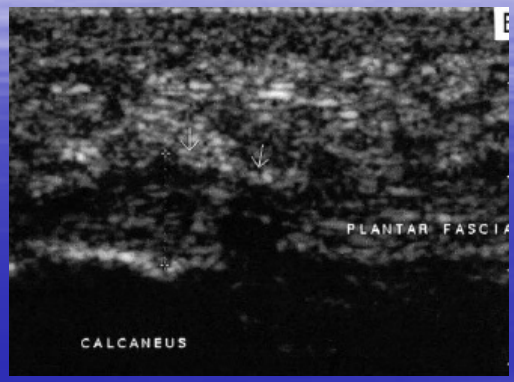
Ultrasound Detection of Heel Enthesitis: A Comparison with Magnetic Resonance Imaging

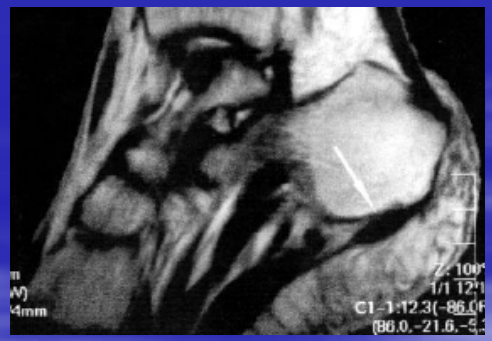
MOHAMED KAMEL, HAZEM EID, and RAMY MANSOUR

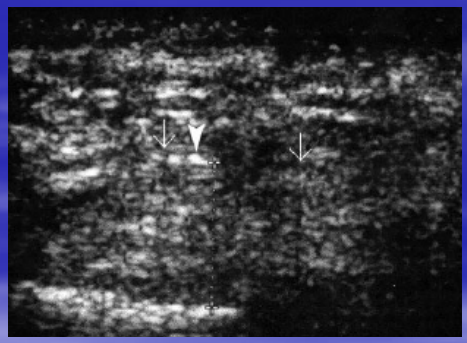
The Journal of Rheumatology 2003; 30:4

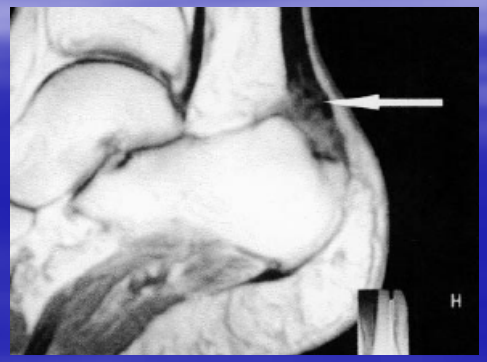
- MRI was not sensitive compared to US in detecting early changes of enthesopathy.
- Fatty degeneration appeared late in MRI, while it was detected earlier using US.
- MRI was not able to detect any calcification process at the insertion site, while US images clearly showed the very early signs of the calcification process.
- We recommend use of US for early diagnosis and in treatment and followup of patients with tendon enthesopathy, to accurately identify and diagnose different pathologic and biomechanical changes.

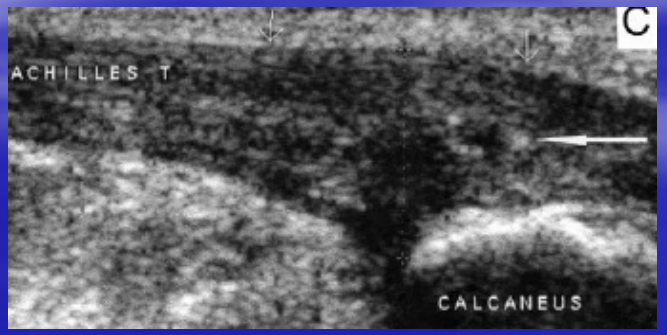












Quale imaging nelle entesopatie?

- RISONANZA MAGNETICA
- VANTAGGI
- Dimostrazione di lesioni acute infiammatorie,
- Correla con il dato clinico
- Utile nel follow-up
- Non uso i radiazioni
- SVANTAGGI
- Scarsa sensibilità per il riconoscimento di calcificazioni,
- Scarsa sensibilità nel riconoscimento di alterazioni degenerative
- Non facile disponiblità
- Costo elevato

Quale imaging nelle entesopatie?

- **ULTRASONOGRAFIA**
- Metodo di scelta,
- Ottima sensibilità e specificità,
- Buona riproducibilità,
- Possibile correlazione con il dato clinico
- Non uso di radiazioni ionizzanti
- Utile nel follow-up
- Costo limitato
- Facile disponibilità.

Quale imaging nelle entesopatie?

- **ULTRASONOGRAFIA**
- SVANTAGGI
- Operatore dipendenza
- Non sufficiente standardizzazione
- Minore esperienza

Quale imaging ?

- Nessuna : scelta possibile non linee guida sull'imaging periferico nelle SpA Scarsa sensibilità rispetto all'imaging.
- RX : dimostrazione di lesioni stabilizzate, scarsa sensibilità nelle lesioni iniziali, correla come indice con il dato clinico
- MRI : dimostrazione di lesioni acute, scarsa sensibilità per il riconoscimento di calcificazioni, limitazioni dalla scarsa disponibilità, non radiazioni, correla con il dato clinico.

Quale imaging ?

- Scintigrafia : uso di radiazioni, buona sensibilità, multiple sedi valutate contemporaneamente
- Ultrasuoni : metodo di scelta, ottima sensibilità e specificità, buona riproducibilità, possibile correlazione con il dato clinico.
- PET : ancora sperimentale, radiazioni, buona correlazione con il dato clinico, multiple sedi contemporaneamente
- RMN total body : ancora scarsa disponibilità, non radiazioni, multiple sedi contemporaneamente (entesi, articolari, assiali, periferiche)

Joint Bone Spine xxx (2010) xxx–xxx

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Original article

Correlations among clinical, radiographic, and sonographic scores for enthesitis in ankylosing spondylitis

Wafa Hamdi[a,*], Mouna Chelli-Bouaziz[b], Mohamed Salah Ahmed[b], Mohamed Mehdi Ghannouchi[a], Dhia Kaffel[a], Mohamed Fethi Ladeb[b], Mohamed Montacer Kchir[a]

Correlations among clinical, radiographic, and sonographic scores.

	Total radiographic score	Sonographic score for acute enthesitis	Sonographic score for chronic enthesitis	Doppler score	Total sonographic score
VAS score for entheseal pain	$r = 0.2$-$P = 0.004$	$r = 0.1$	$r = 0.14$	$r = 0.24$	$r = 0.17$
		$P = 0.1$	$P = 0.1$	$P = 0.007$	$P = 0.06$
MASES	$r = 0.114$	$r = 0.2$	$r = 0.14$	$r = 0.1$	$r = 0.24$
	$P = 0.2$	$P = 0.006$	$P = 0.12$	$P = 0.27$	$P = 0.008$
SPARCC	$r = 0.12$	$r = 0.15$	$r = 0.17$	$r = 0.12$	$r = 0.19$
	$P = 0.16$	$P = 0.09$	$P = 0.05$	$P = 0.18$	$P = 0.03$
BASDAI	$r = 0.21$	$r = 0.03$	$r = 0.05$	$r = 0.26$	$r = 0.07$
	$P = 0.018$	$P = 0.74$	$P = 0.54$	$P = 0.003$	$P = 0.43$
BASFI	$r = 0.21$	$r = 0.02$	$r = 0.1$	$r = 0.29$	$r = 0.14$
	$P = 0.02$	$P = 0.8$	$P = 0.26$	$P = 0.001$	$P = 0.662$
ASQoL	$r = 0.076$	$r = 0.07$	$r = -0.03$	$r = 0.28$	$r = 0.03$
	$P = 0.4$	$P = 0.42$	$P = 0.73$	$P = 0.002$	$P = 0.72$

Quale terapia

- Infiltrazione locale con steroidi

  (prevista dalle linee guida ma non indicati i dosaggi, non studi controllati, solo case-report, non indicate le metodologie (intra-tendineo, peritendineo, metodo palpatorio o imaging guidato)
- FANS a dosaggio pieno

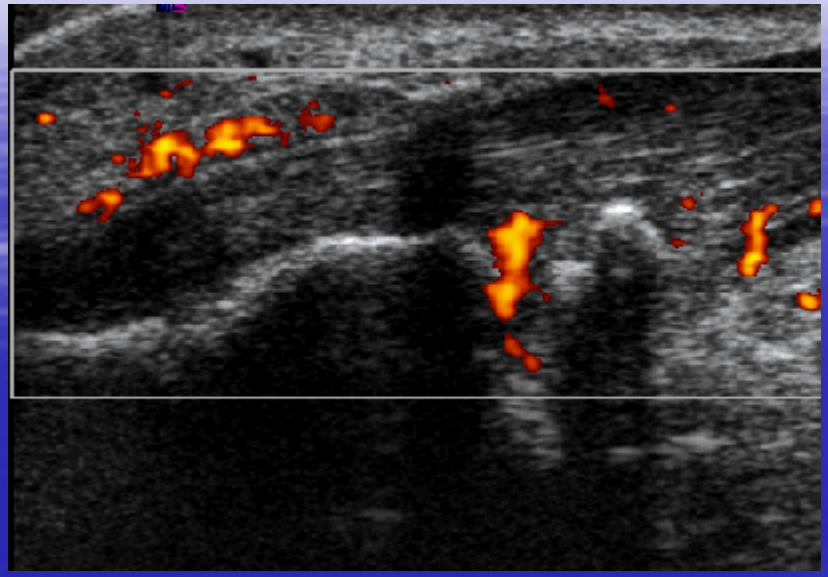
  (pochi studi, probabile efficacia, poche indicazioni sulla durata e sul dosaggio.)
- Sulfasalazina

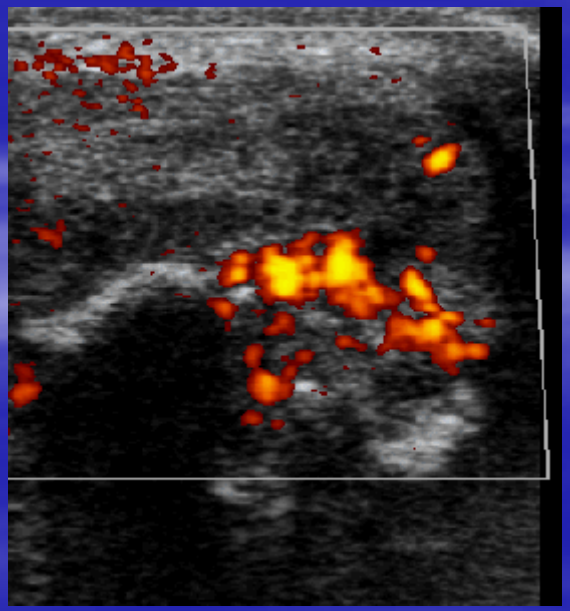
  (pochi studi, non efficace.)
- Methotrexate

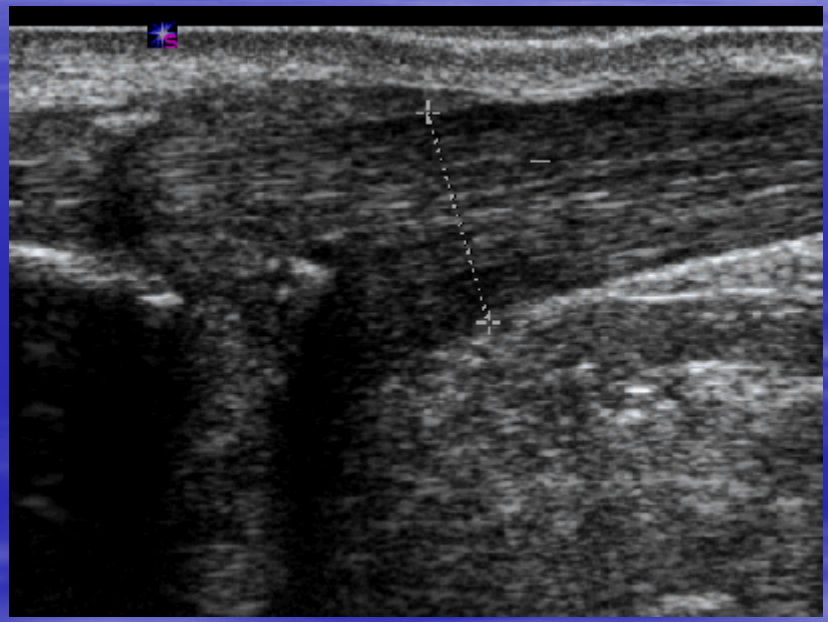
  (pochi studi, non efficace.)
- Anti-TNF

  (farmaci di scelta nei casi non responder alle terapie locali o ai FANS, previsti da tutte le linee guida internazionali e nazionali. Solo recente comparsa di studi randomizzati specifici per questo item.)

Tendine di Achille in longitudinale prima della infiltrazione







Scand J Med Sci Sports 2004: 14: 100–106
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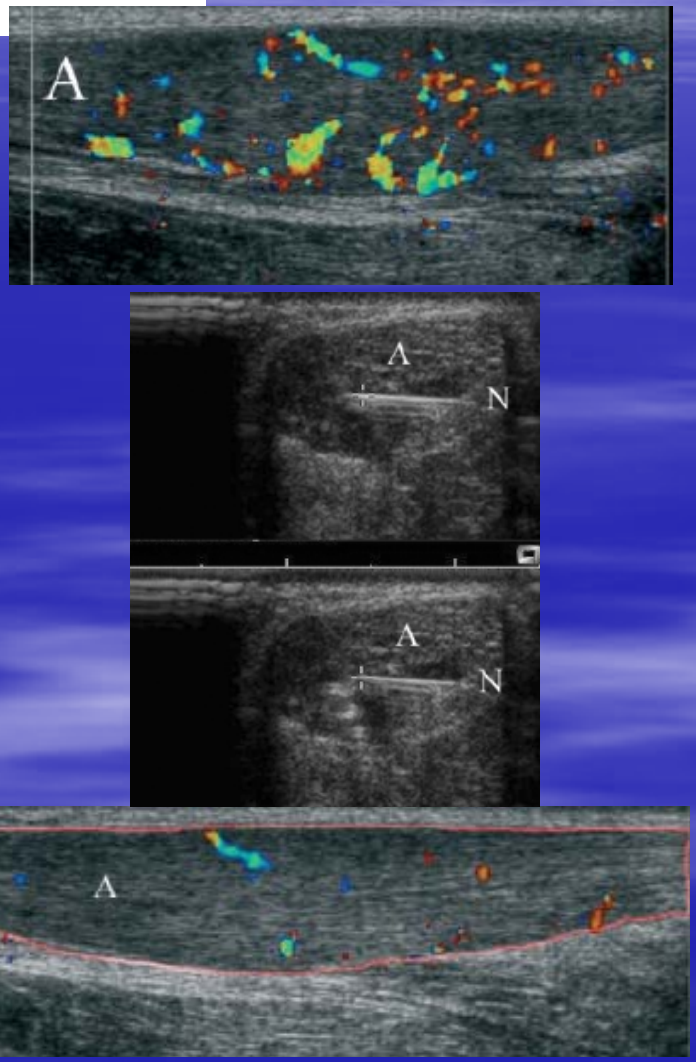
DOI: 10.1046/j.1600-0838.2003.00364.x

SCANDINAVIAN JOURNAL OF MEDICINE & SCIENCE IN SPORTS

Preliminary results of colour Doppler-guided intratendinous glucocorticoid injection for Achilles tendonitis in five patients

M. J. Koenig, S. Torp-Pedersen, E. Qvistgaard, L. Terslev, H. Bliddal

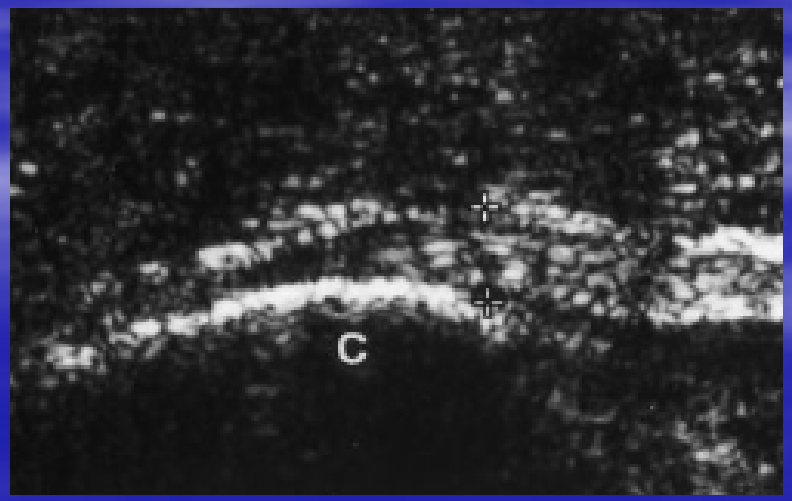
- 6 tendons in 5 patients were evaluated with GS US and CD before and after US-guided intratendinous GC injection.
- Pain at rest and at activity was evaluated on a VAS.
- **Results:**
- With CD all tendons had intratendinous flow.
- Pain and CD activity decreased during a mean follow-up of 182 days (range 92–309 days).
- One tendon relapsed after 199 days.
- **Conclusion:**
- Intratendinous GC injections seem to have a marked effect on both symptoms and CD findings.
- CD adds significant information to GSUS with regard to diagnosis, location and follow-up of AT.



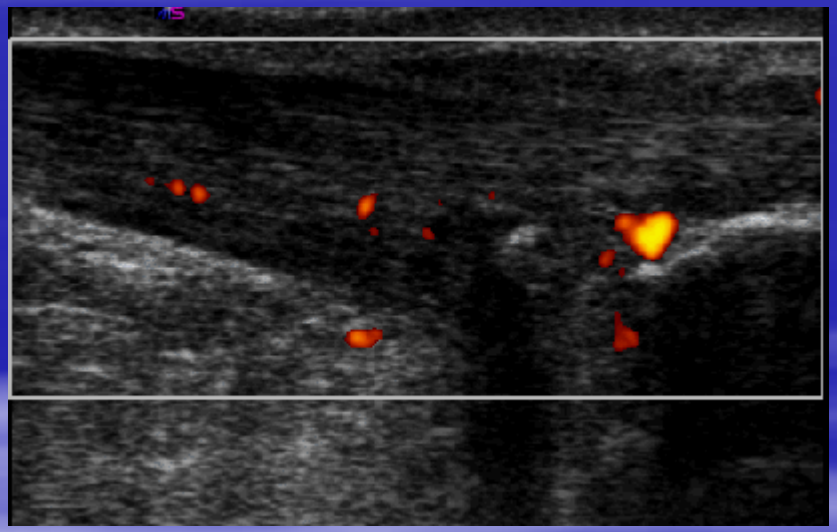
Plantar Fasciitis Treated with Local Steroid Injection: Comparison between Sonographic and Palpation Guidance

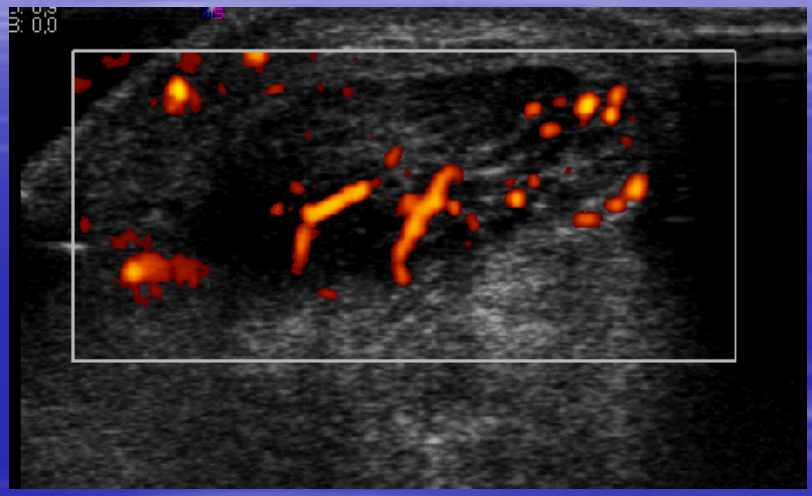
Wen-Chung Tsai, MD, PhD,[1] Chih-Chin Hsu, MD, PhD,[1] Carl P. C. Chen, MD,[1]
Max J. L. Chen, MD,[1] Tung-Yang Yu, MD,[1] Ying-Jen Chen, MD[2]

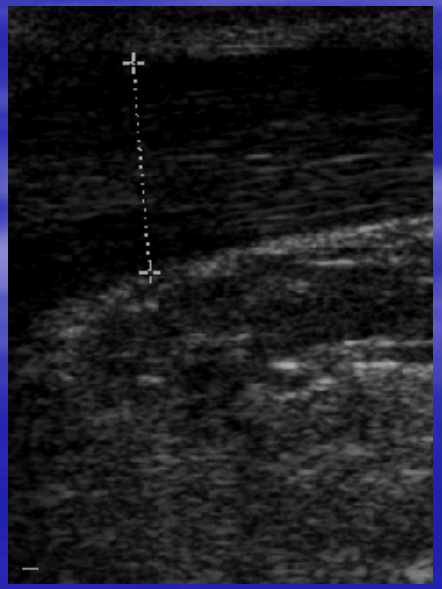
- Injection of 7 mg (1 ml) of betamethasone and 0.5 ml of 1% lidocaine into the inflamed proximal plantar fascia was performed under US guidance or palpation.
- VAS-measured levels of pain improved significantly after CS injection in both groups ($p < 0.001$).
- Thickness decreased significantly after injection ($p < 0.01$ in the palpationguided group; $p < 0.001$ in the US guided group).
- The number of patients with hypoechogenicity at the proximal plantar fascia decreased after CS injection in both groups ($p < 0.01$ for both groups).
- The recurrence rate of plantar fasciitis in patients of the palpation-guided group (6/13) was significantly higher than that of the US guided group (1/12) ($p < 0.05$).

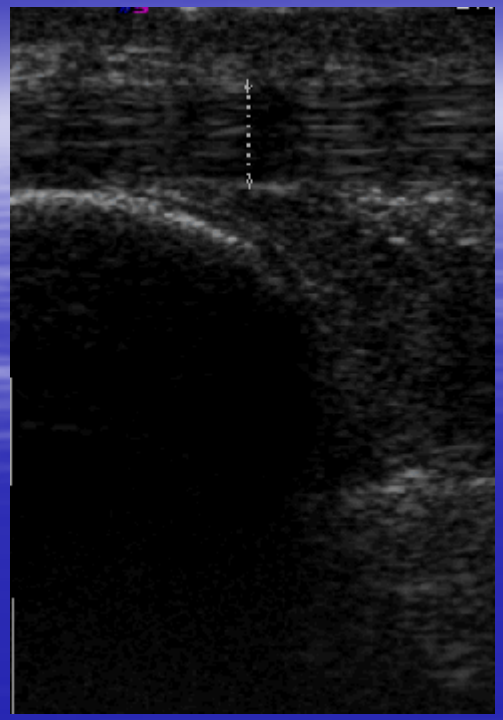


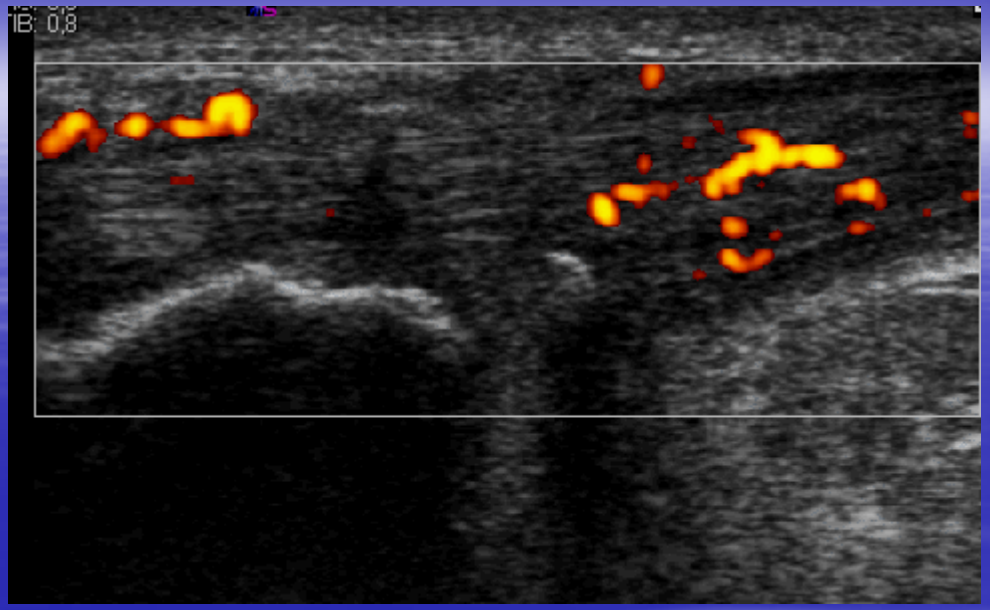
Tendine di Achille dopo 2 infiltrazioni di steroidi

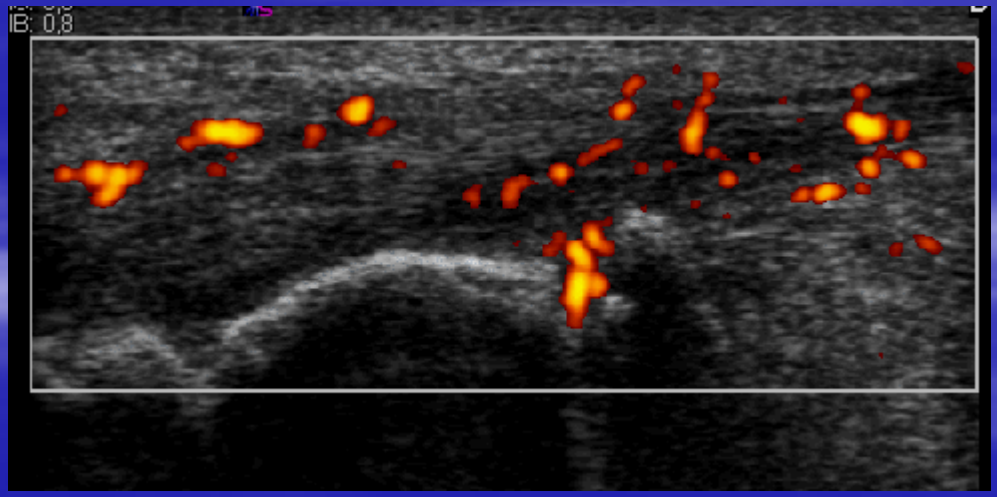









IB: 0,8


IB: 0,8

ARTHRITIS & RHEUMATISM
Vol. 44, No. 9, September 2001, pp 2112–2117

Published by Wiley-Liss, Inc.

Efficacy of Etanercept in the Treatment of the Entheseal Pathology in Resistant Spondylarthropathy

A Clinical and Magnetic Resonance Imaging Study

Helena Marzo-Ortega,[1] Dennis McGonagle,[1] Philip O'Connor,[2] and Paul Emery[1]

Ø Nine patients had a total of 44 MRI-detectable entheseal lesions.
These were seen in the SI joints in 6 patients (n 5 = 15 lesions), in the lumbar or cervical spine in 9 patients (n 5 = 22 lesions), and in peripheral joints in 5 patients (n 5 = 7 lesions).
Ø Overall, 86% of MRI detected entheseal lesions either regressed completely or improved.
Ø No new lesions developed.
Ø *Conclusion. TNFa* blockade with etanercept is markedly effective in controlling the clinical manifestations of SpA that is resistant to disease-modifying antirheumatic drugs. This is associated with marked improvement of enthesitis and associated osteitis pathology as determined by MRI.

Table 2. Summary of the scoring results of magnetic resonance imaging lesions at the different sites assessed before and after treatment with etanercept*

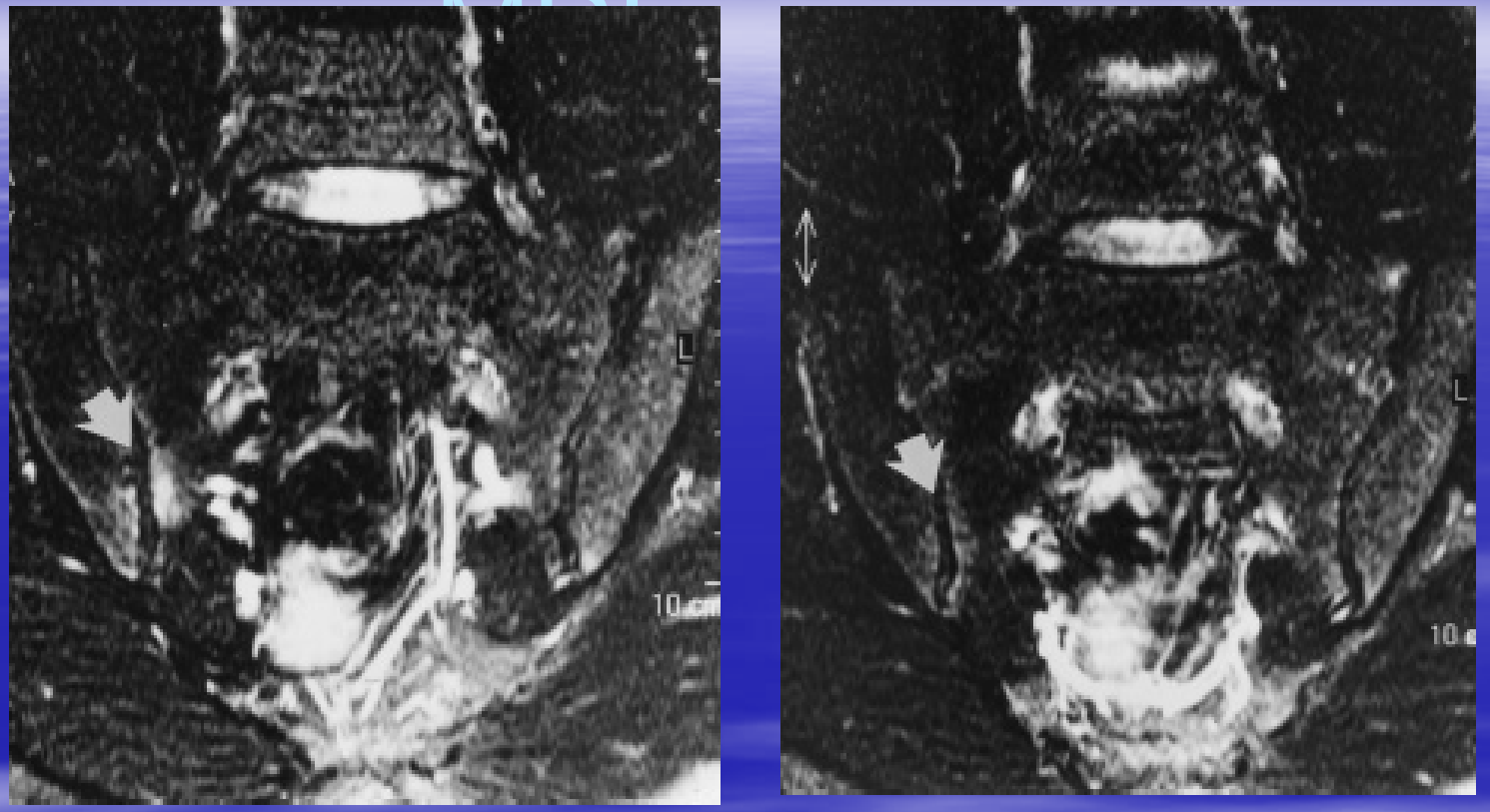
		Week 24			
	Baseline	Resolution	Improvement	No change	New lesions
Sacroiliac joint	15	6 (40)	3 (20)	6 (40)	0
Spine	22	17 (77)	5 (23)	0	0
Peripheral joints	7	4 (57)	3 (43)	0	0
Total†	44	27 (61)	11 (25)	6 (14)	0

* Values are the number (%) of lesions.
† A total of 38 lesions (86%) either resolved completely (score of −3) or improved (score of −2 or −1). A total of 6 lesions (14%) remained unchanged (score of 0).

Definizione di entesite in MRI

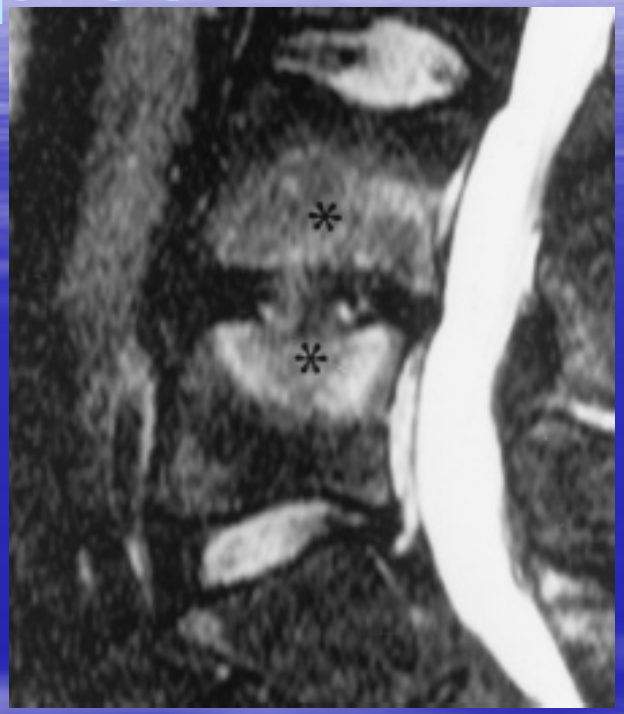
- MRI enthesitis was defined on T2 FS images as bone edema (identified by high or intermediate marrow signal) and/or soft tissue edema (high signal in the extracapsular connective tissues) adjacent to entheses.
- *MRI scoring.*
- In the SI joints, 4 quadrants were assessed: right upper, left upper, right lower, and left lower. Each quadrant was subdivided into ilial and sacral aspects.
- In the spine, lesions were classified as present within the vertebrae or in the paraspinal soft tissues

Anti-TNF : follow MRI



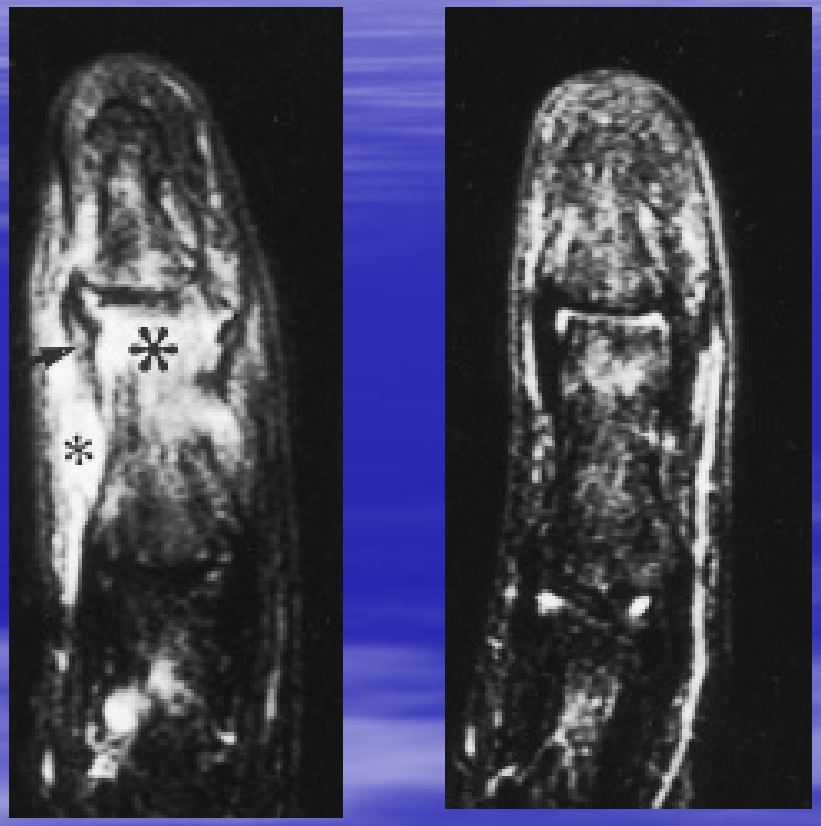
T2-weighted fat-suppressed (FS) coronal oblique magnetic resonance image of the sacroiliac (SI) joints of a patient with undifferentiated spondylarthropathy **before and after** treatment with etanercept, showing resolution of bone edema in the inferior aspect of the right SI joint (**white arrows).**

Anti-TNF : follow up con MRI



T2-weighted FS sagittal sequence of the lumbar spine showing end-plate edema of the L4 inferior and L5 superior vertebral bodies (**black asterisks).**
Followup scan after treatment with etanercept shows complete resolution of the edema.

Anti-TNF : follow up con MRI



T1-weighted fat-suppressed post-gadolinium coronal sequence of the left second distal IP joint of a patient with Undifferentiated SpA.
Before treatment with ETN there is extensive subcutaneous edema (**small black asterisk) and bone marrow edema (large black asterisk) with inflammatory change within the collateral ligament (black arrow).**
After 6 months of treatment with ETN, there is a marked improvement of all the features described.

The Journal of Rheumatology Volume 33, no. 6

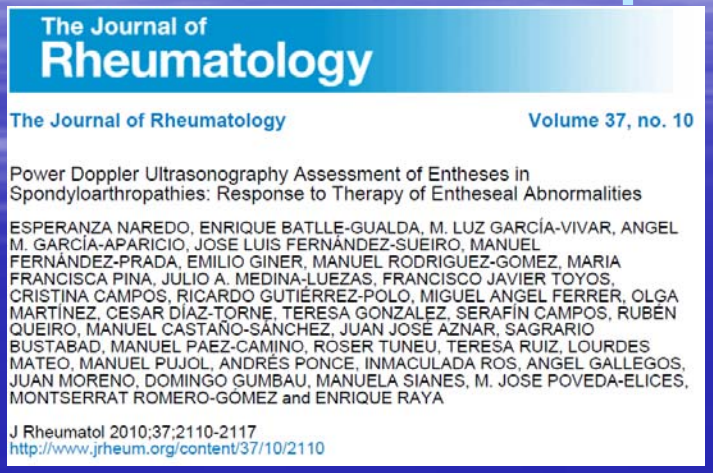
Radiologic Improvement of juvenile idiopathic arthritis-enthesitis-related arthritis following anti-tumor necrosis factor-alpha blockade with etanercept.

Shirley M L Tse, Ronald M Laxer, Paul S Babyn and Andrea S Doria

J Rheumatol 2006;33;1186-1188

Sagittal fat-suppressed T1- weighted MR images of the left knee following contrast administration: prior to, at 6 weeks, and 2 years after starting etanercept.

Gli US nel follow-up delle entesopatie



The Journal of Rheumatology

The Journal of Rheumatology Volume 37, no. 10

Power Doppler Ultrasonography Assessment of Entheses in Spondyloarthropathies: Response to Therapy of Entheseal Abnormalities

ESPERANZA NAREDO, ENRIQUE BATLLE-GUALDA, M. LUZ GARCÍA-VIVAR, ANGEL M. GARCÍA-APARICIO, JOSE LUIS FERNÁNDEZ-SUEIRO, MANUEL FERNÁNDEZ-PRADA, EMILIO GINER, MANUEL RODRIGUEZ-GOMEZ, MARIA FRANCISCA PINA, JULIO A. MEDINA-LUEZAS, FRANCISCO JAVIER TOYOS, CRISTINA CAMPOS, RICARDO GUTIÉRREZ-POLO, MIGUEL ANGEL FERRER, OLGA MARTÍNEZ, CESAR DÍAZ-TORNE, TERESA GONZALEZ, SERAFÍN CAMPOS, RUBÉN QUEIRO, MANUEL CASTAÑO-SÁNCHEZ, JUAN JOSÉ AZNAR, SAGRARIO BUSTABAD, MANUEL PAEZ-CAMINO, ROSER TUNEU, TERESA RUIZ, LOURDES MATEO, MANUEL PUJOL, ANDRÉS PONCE, INMACULADA ROS, ANGEL GALLEGOS, JUAN MORENO, DOMINGO GUMBAU, MANUELA SIANES, M. JOSE POVEDA-ELICES, MONTSERRAT ROMERO-GÓMEZ and ENRIQUE RAYA

J Rheumatol 2010;37;2110-2117
http://www.jrheum.org/content/37/10/2110

- At each enthesis, the following elementary lesions were assessed
- (1) entheseal morphologic abnormalities (i.e., hypoechogenicity and/or thickening);
- (2) entheseal calcific deposits;
- (3) entheseal cortical abnormalities (i.e., bone erosion and/or enthesophytes);
- (4) adjacent bursitis;

DEFINITION

Ø Enthesis thickening and hypoechogenicity were evaluated relative to the body of the tendon.

Ø Calcific deposit at the enthesis was defined as hyperechoic spots or lines at the preinsertional area of the tendons, with or without acoustic shadowing, seen in 2 perpendicular planes.

Ø Bone erosion was defined as a discontinuity of the entheseal bone surface, seen in 2 perpendicular planes.

Ø Enthesophyte was defined as a hyperechoic prominence at the end of the entheseal bone contour, seen in 2 perpendicular planes.

Ø Bursitis was defined as a well circumscribed hypoechoic or anechoic collection at the site of an anatomic bursa.

Gli US nel follow-up delle entesopatie

Table 1. Power doppler ultrasound (PDUS) scanning method of the entheses.

Enthesis (bilateral)	Patient Position	Probe Placement
Common extensor tendon (lateral elbow epicondyle)	Sitting facing the examiner, with arms partially flexed on a table and palmar surfaces of hands together	Over the lateral epicondyle, in longitudinal and transverse position. In longitudinal position, with slight inclination of the distal portion of the probe oriented parallel to long axis of extensor muscles
Common flexor tendon (medial elbow epicondyle)	Sitting facing the examiner, with arms lying extended on a table, palms facing up	Over the medical epicondyle, in longitudinal and transverse position. In longitudinal position, with slight inclination of the distal end of the probe oriented parallel to long axis of flexor muscles
Quadriceps tendon (superior pole of patella)	Supine decubitus with the knee flexed 30° for GS and in neutral position for PD	Over the proximal pole of the patella, in longitudinal and transverse position
Proximal patellar tendon (inferior pole of patella)	Supine decubitus with the knee flexed 45° for GS and in neutral position for PD	Over the distal pole of the patella, in longitudinal and transverse position
Distal patellar tendon (anterior tibial tuberosity)	Supine decubitis with the knee flexed 45° for GS and in neutral position for PD	Over the anterior tibial tuberosity, in longitudinal and transverse position
Achilles tendon (superior pole of calcaneus)	Prone decubitus with the feet hanging outside the examination table in slight dorsal flexion for GS and in neutral position for PD	Over the posterior and superior aspect of the calcaneus, in longitudinal and transverse position
Plantar fascia (inferior aspect of calcaneus)	Prone decubitus with the feet hanging outside the examination table in slight dorsal flexion for GS and in neutral position for PD	Over the plantar aspect of the calcaneus, in longitudinal and transverse position

Gli US nel follow-up delle entesopatie

Table 2. Changes in clinical measures and ultrasonography elementary lesion scores from baseline to 6 months.

Measure	Baseline, mean ± SD (range)	6 Months, mean ± SD (range)	p
BASDAI	5.83 ± 1.48 (2.1–9.2)	3.22 ± 2.16 (0–9.4)	< 0.0005
BASFI	5.43 ± 2.17 (0–9.6)	3.61 ± 2.60 (0–9.9)	< 0.0005
MASES	3.96 ± 3.22 (0–12)	2.52 ± 2.80 (0–13)	< 0.0005
Morphologic abnormality score	2.19 ± 2.66 (0–11)	1.34 ± 2.02 (0–12)	< 0.0005
Calcific deposit score	1.11 ± 1.63 (0–9)	1.23 ± 1.79 (0–9)	0.142
Cortical abnormality score	3.92 ± 3.73 (0–14)	4.17 ± 3.86 (0–14)	0.036
Adjacent bursitis score	0.94 ± 1.21 (0–5)	0.76 ± 1.19 (0–6)	0.036
Intraenthesis Power Doppler score	1.36 ± 2.11 (0–12)	0.68 ± 1.64 (0–11)	< 0.0005
Perienthesis Power Doppler score	1.75 ± 2.92 (0–14)	0.98 ± 2.23 (0–13)	< 0.0005

Table 3. Percentage of patients who showed each elementary lesion at any enthesis.

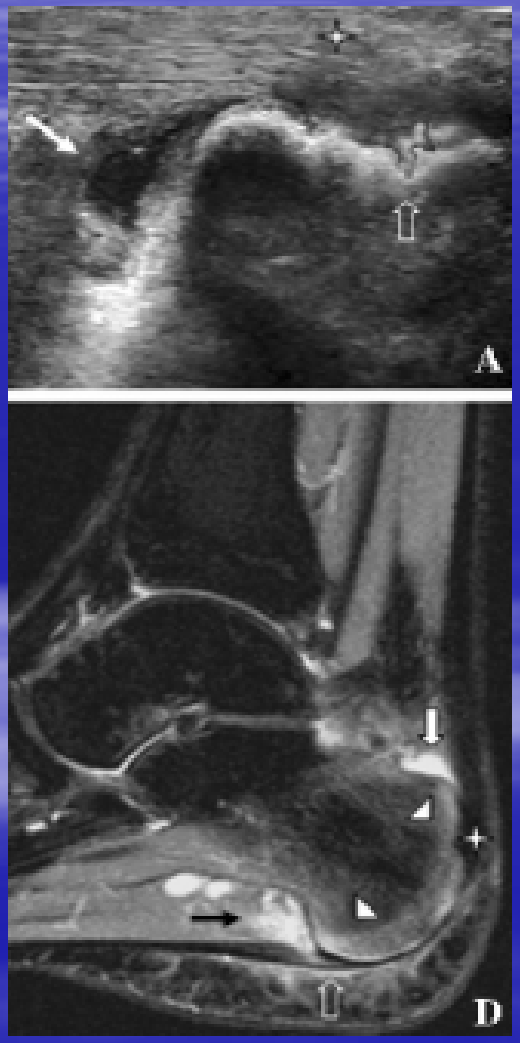
Elementary Lesion	Baseline (% of patients)	6 Months (% of patients)
Morphologic abnormalities	61.4	46.7
Calcific deposits	47.7	48.7
Cortical abnormalities	79.7	78.7
Adjacent bursitis	46.7	37.1
Intraenthesis PD signal	47.2	26.9
Perienthesis PD signal	57.9	29.9

PD: power Doppler.

- There was no correlation between clinical and laboratory measures and PDUS abnormalities.
- There was no correlation between US entheseal findings and clinical (BASDAI, BASFI) and laboratory (CRP, ESR) measures.
- There was no correlation between MASES and PDUS findings.
- Responsive PDUS abnormalities seemed to be markers of SpA activity independent of conventional clinical and laboratory indicators.
- Entheseal morphologic abnormalities, PD signal, and bursitis were US abnormalities that were responsive to anti-TNF therapy in SpA.
- PDUS can be a reproducible method for multicenter monitoring of therapeutic response in enthesitis of SpA.

Successful adalimumab treatment of HLA B27 negative heel enthesitis documented with MRI and US

MANCARELL A et al, Clin Exp Rheumatol, 2008

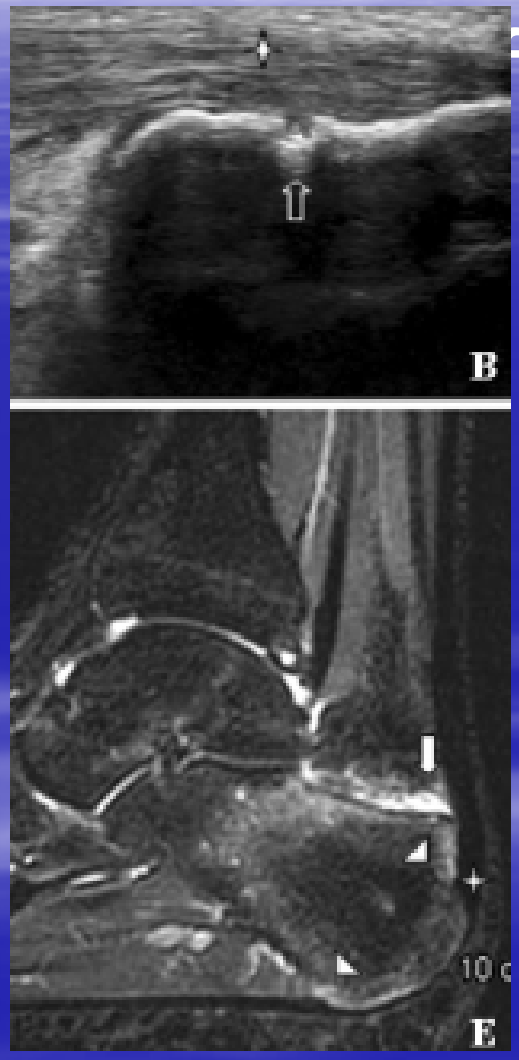


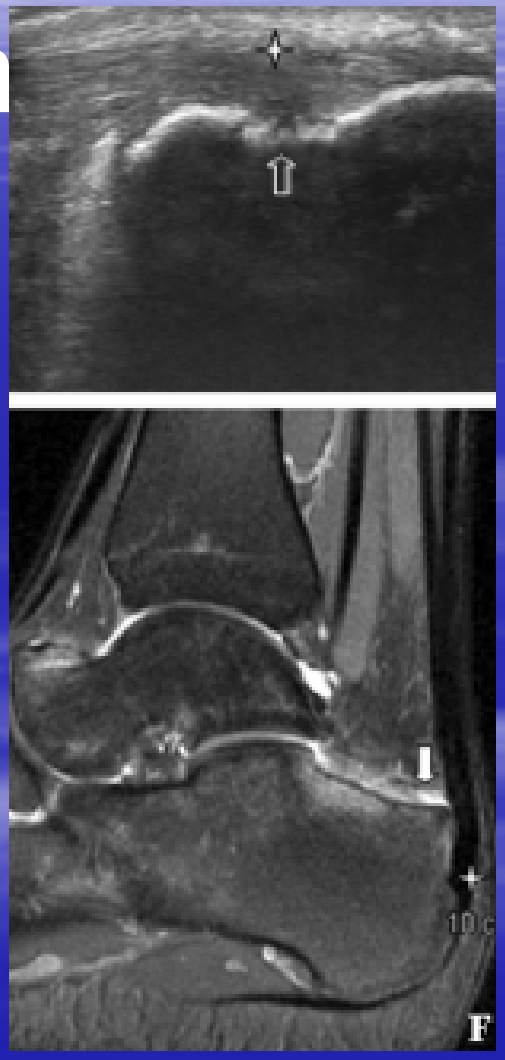
Longitudinal US images showed a mild thickening and reduced echogenicity of normal fibrillar echotexture of the Achilles tendon related to inflammatory oedema (star), distension of retrocalcaneal bursae (white solid arrow), bone cortical erosions in the proximal part of the enthesis with signs of hypervascularisation on power Doppler imaging inside the erosion (open arrow), before therapy.

Sagittal MRI fat-sat images showing irregularities of cortical bone at the enthesis of the Achilles tendon (star), retrocalcaneal bursitis (white solid arrow), diffuse bone marrow oedema (arrowheads), particularly at the insertions of both the Achilles tendon and plantar fascia, soft tissue oedema (black solid arrow), and plantar fasciitis (open arrow).

as shown after :

3 months (B,E) and 6 months





STORIA CLINICA

- TERAPIA
- Inizia farmaco anti-TNF
- Dopo 6 settimane di terapia
- Dolore entesi : 10
- BASDAI : - 2.5
- BASFI : - 3.4
- PCR normalizzata
- VES normalizzata
- Eco achillea non più PD signal

Sezione interattiva
Proseguire terapia con biologici

- Proseguire sempre :

  (per la terapia convenzionale con FANS è stata dimostrata la maggiore efficacia della terapia cronica rispetto alla strategia on demand. Nessuna linea guida prevede la sospensione della terapia con biologici.)

- Interrompere basandosi sul dato clinico :

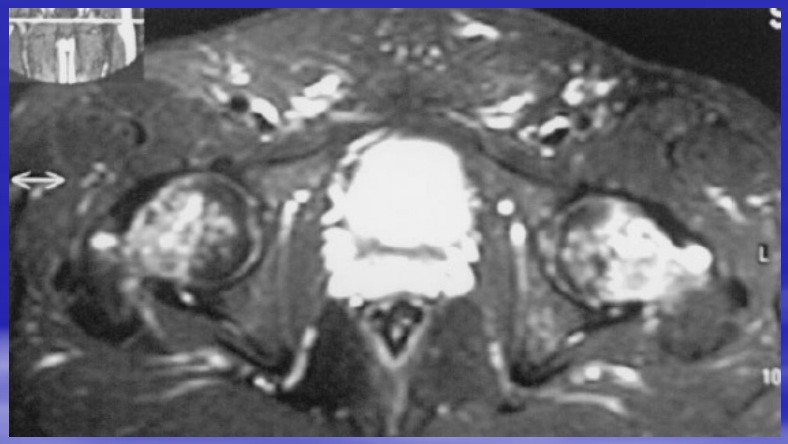
  (pochi dati. Frequenti riprese della malattia)

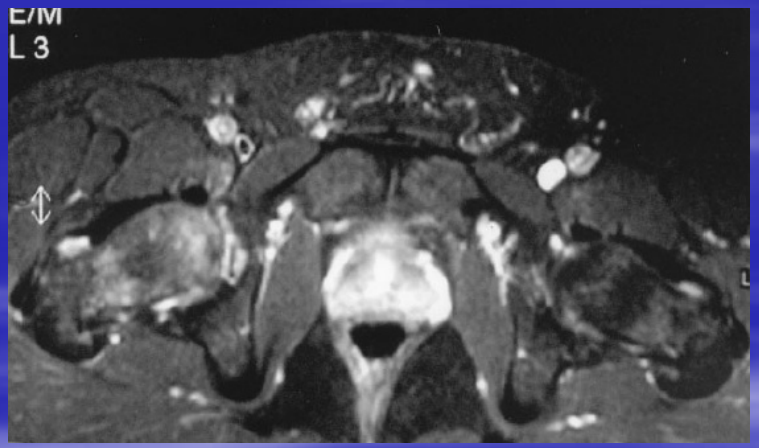
ARTHRITIS & RHEUMATISM
Vol. 46, No. 12, December 2002, pp 3390–3398

DOI 10.1002/art.10596

Efficacy of tumor necrosis factor α blockade for enthesitis in spondylarthropathy: comment on the article by Marzo-Ortega et al

Ignazio Olivieri, MD
Angela Padula, MD
San Carlo Hospital of Potenza and Madonna delle Grazie Hospital Potenza and Matera, Italy
Enrico Scarano, MD
San Carlo Hospital of Potenza Potenza, Italy





Short tau inversion recovery image showing increased signal extending from the right femoral head to the intertrochanteric region due to bone marrow edema.
8 weeks after the first examination and the beginning of IFX therapy, showing dramatic improvement of bone edema at the right hip and regression at the left side.

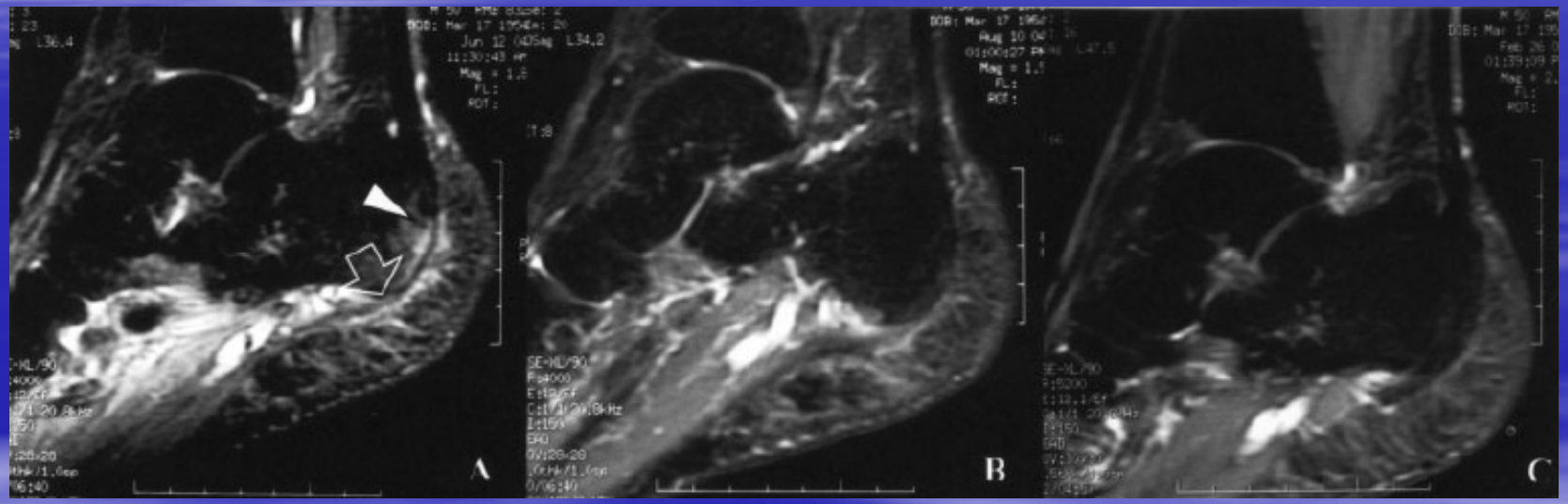
To date, the disease has remained in remission, and the patient has taken no medication.
A third MRI performed at month 6 was normal.

Arthritis & Rheumatism (Arthritis Care & Research)
Vol. 57, No. 8, December 15, 2007, pp 1572–1574
DOI 10.1002/art.23096

CASE REPORT

Switching Tumor Necrosis Factor α Inhibitors in HLA–B27-Associated Severe Heel Enthesitis

IGNAZIO OLIVIERI,[1] ENRICO SCARANO,[2] ANGELA PADULA,[1] SALVATORE D'ANGELO,[1] AND FABRIZIO CANTINI[3]

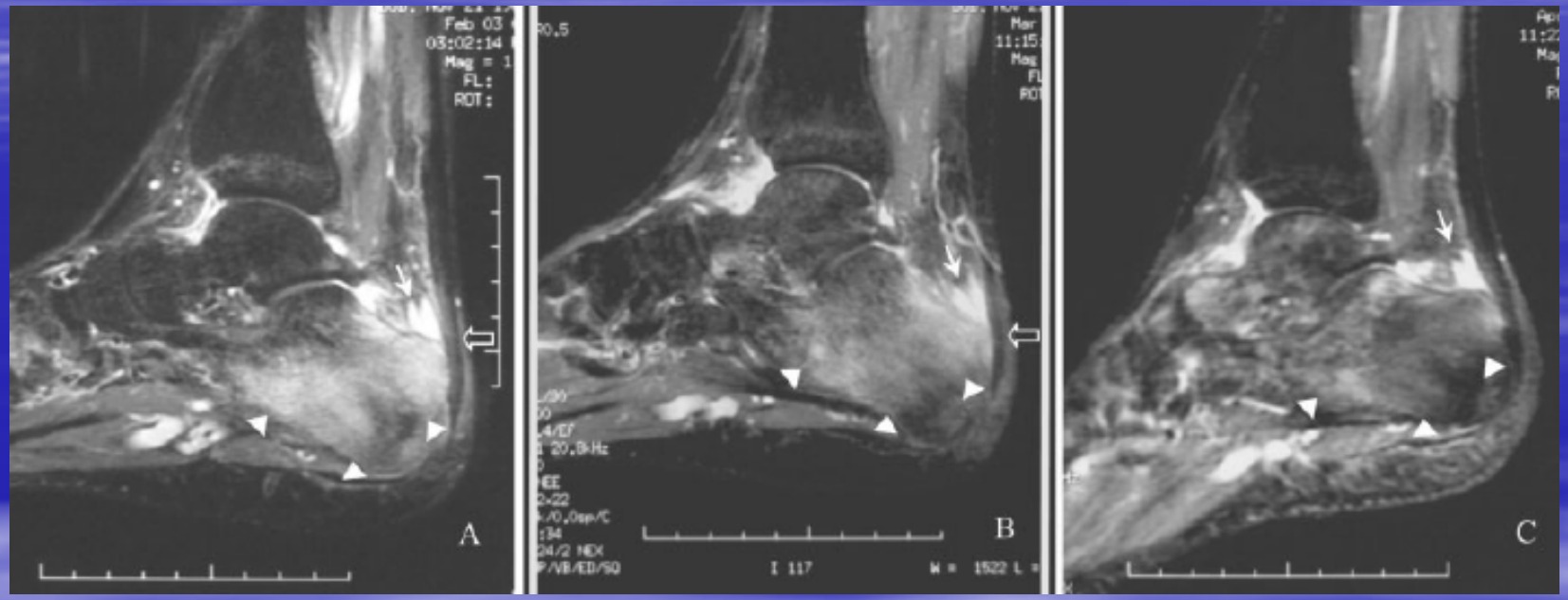


Sagittal STIR sequences of the right plantar fascia tendon.
A, Before ETN therapy there is swelling of the insertion of the plantar fascia (open arrow) together with edema of the adjacent part of the calcaneus (arrowhead).
B, After 2 months of ETN therapy marked improvement in magnetic resonance imaging findings.
C, After 8 months of therapy the calcaneus and the plantar fascia had a normal appearance.

ETN therapy was withdrawn due to the persistent absence of pain and the normalization of MRI.
The patient has been well without any pain until now.

Rheumatology 2006;45: 1315–1316
doi:10.1093/rheumatology/kel208
Advance Access publication 13 July 2006

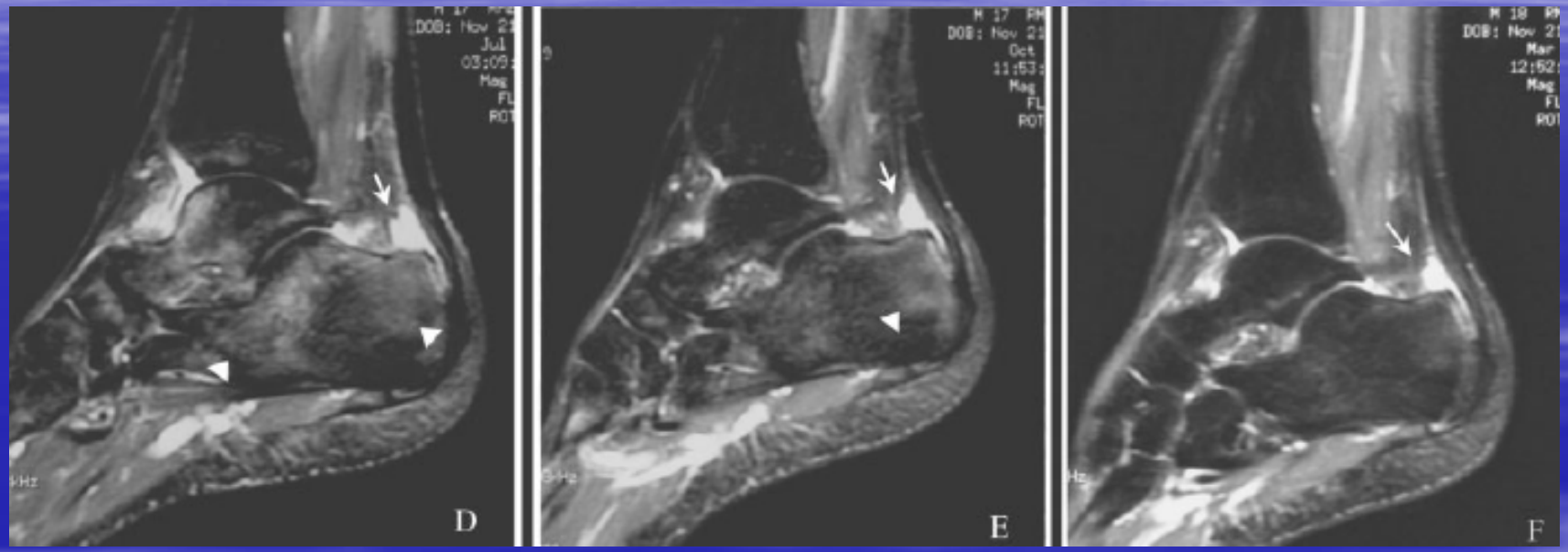
Successful treatment of juvenile-onset HLA-B27-associated severe and refractory heel Thesitis with adalimumab documented by magnetic resonance imaging



Sagittal STIR (short inversion recovery) T2-weighted sequences of the left Achilles tendon.
(A) Imaging obtained the day before the beginning of adalimumab therapy, showing a diffuse oedema of the calcaneus (arrowheads) together with swelling of Achilles tendon (open arrow) and distension of the retrocalcaneal bursa by fluid collection (solid arrow).
(B), 1 month
(C), two months

Rheumatology 2006;45: 1315–1316
doi:10.1093/rheumatology/kel208
Advance Access publication 13 July 2006

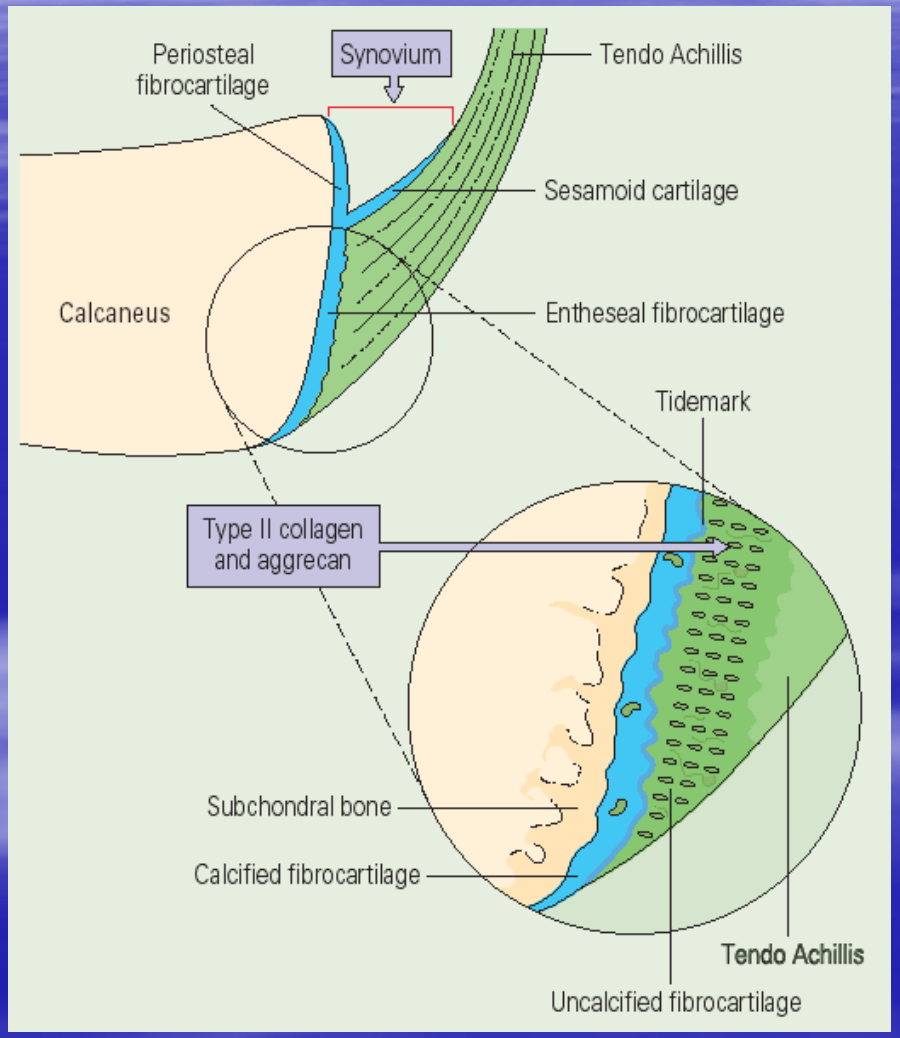
Successful treatment of juvenile-onset HLA-B27-associated severe and refractory heel Thesitis with adalimumab documented by magnetic resonance imaging

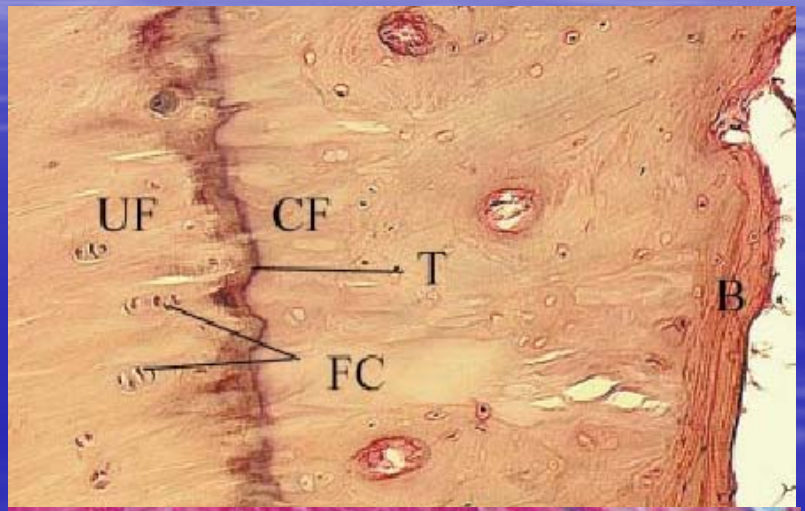


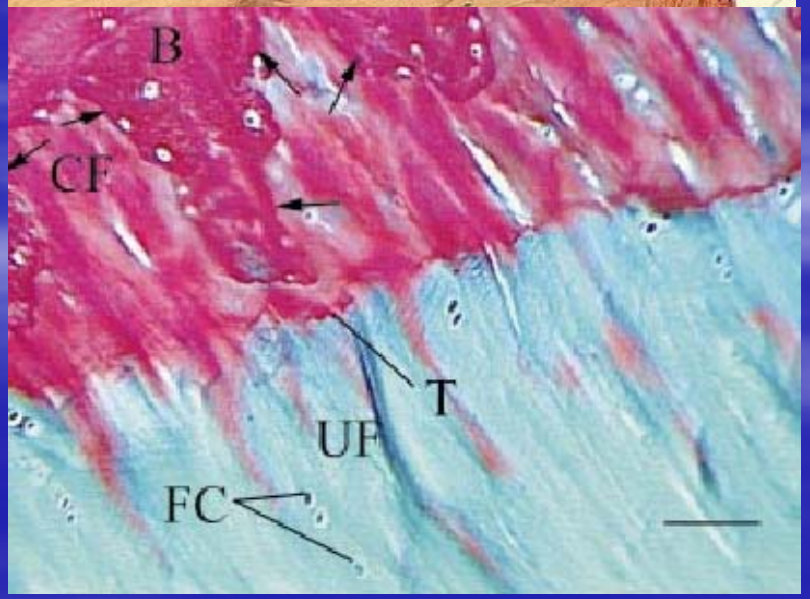
- Sagittal STIR (short inversion recovery) T2-weighted sequences of the left Achilles tendon.
- (D), 5 months
- (E) 8 months and
- (F) 12 months after the beginning of therapy,
- Treatment was interrupted at the fifth month, after observing the (D) imaging.

Tendinite ed entesite achillea

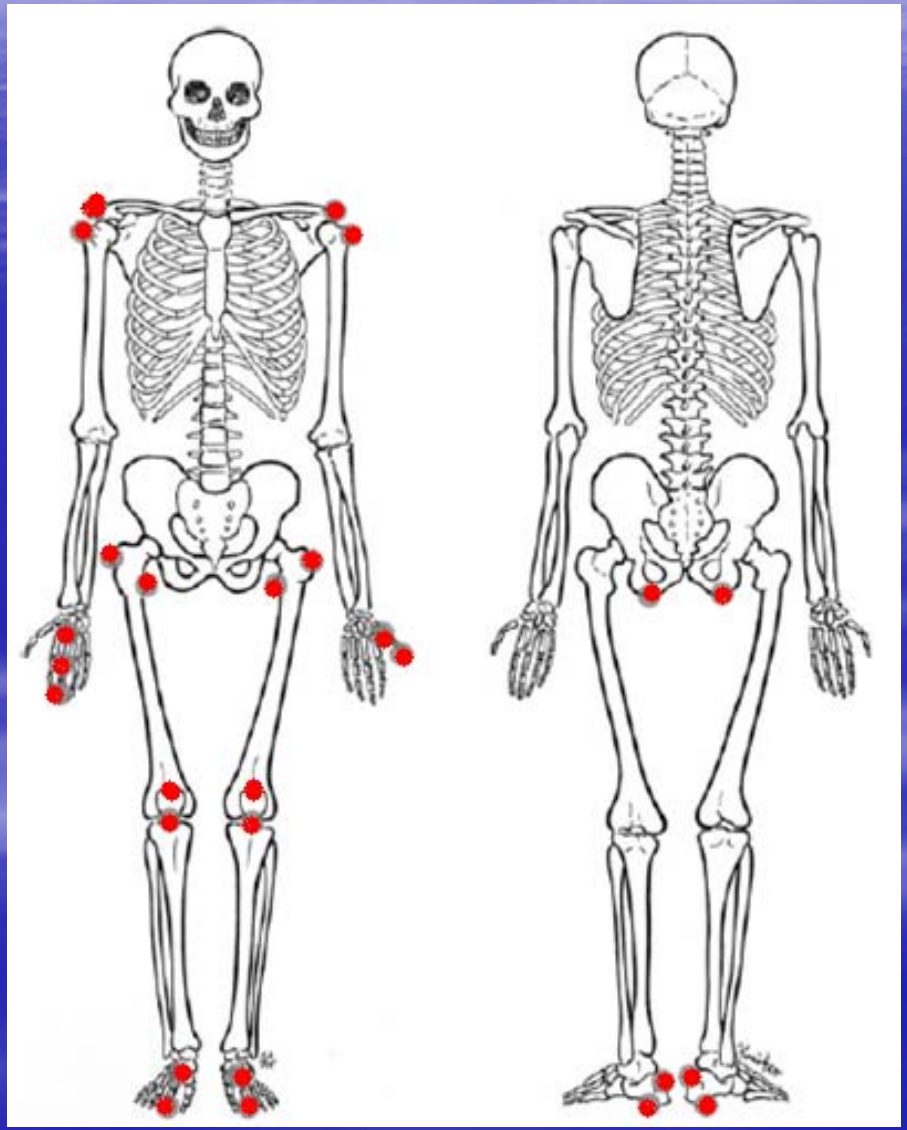
Schema struttura anatomica dell'entesi



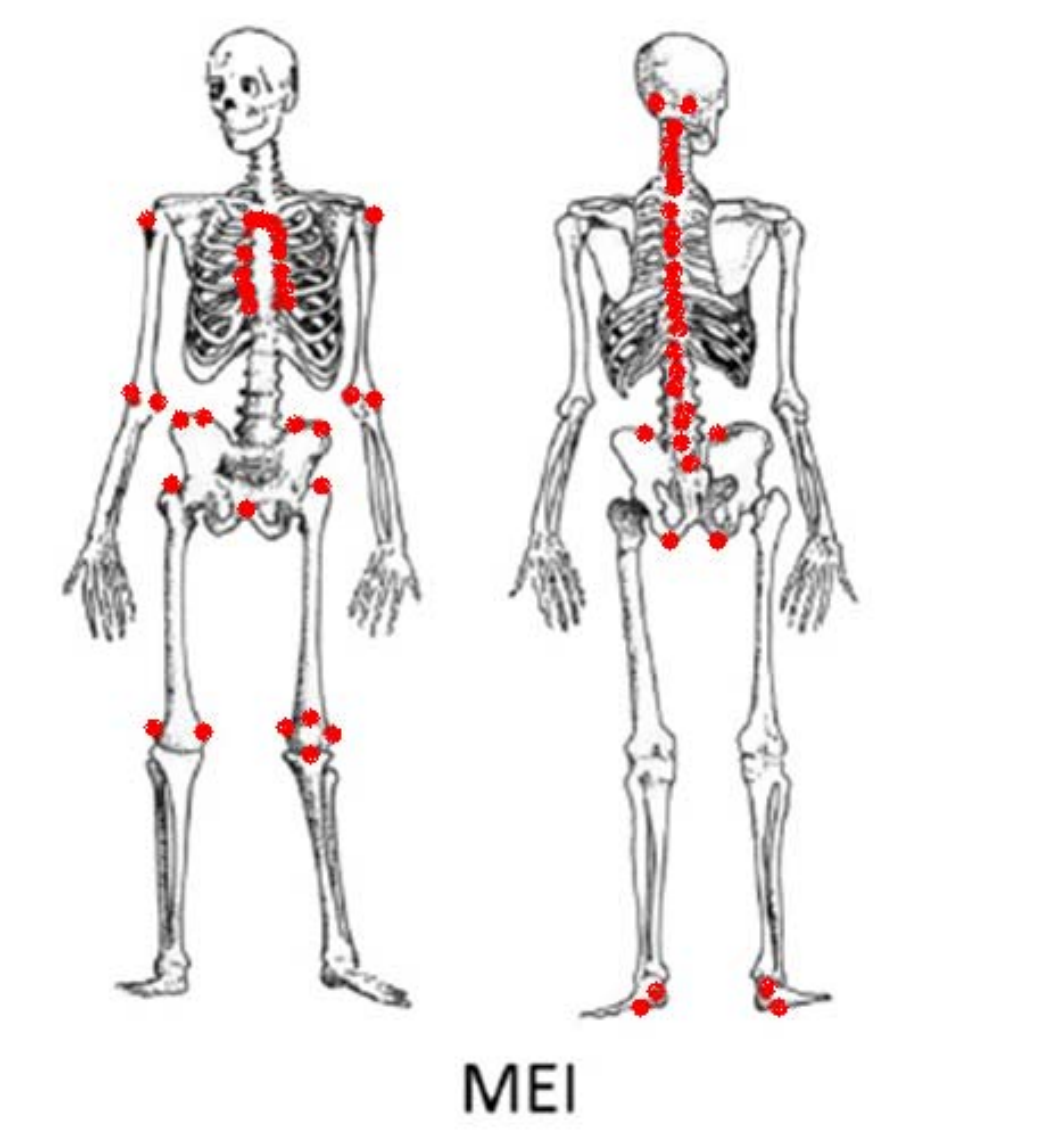




Le sedi entesiche coinvolte più spesso nelle spondiliti

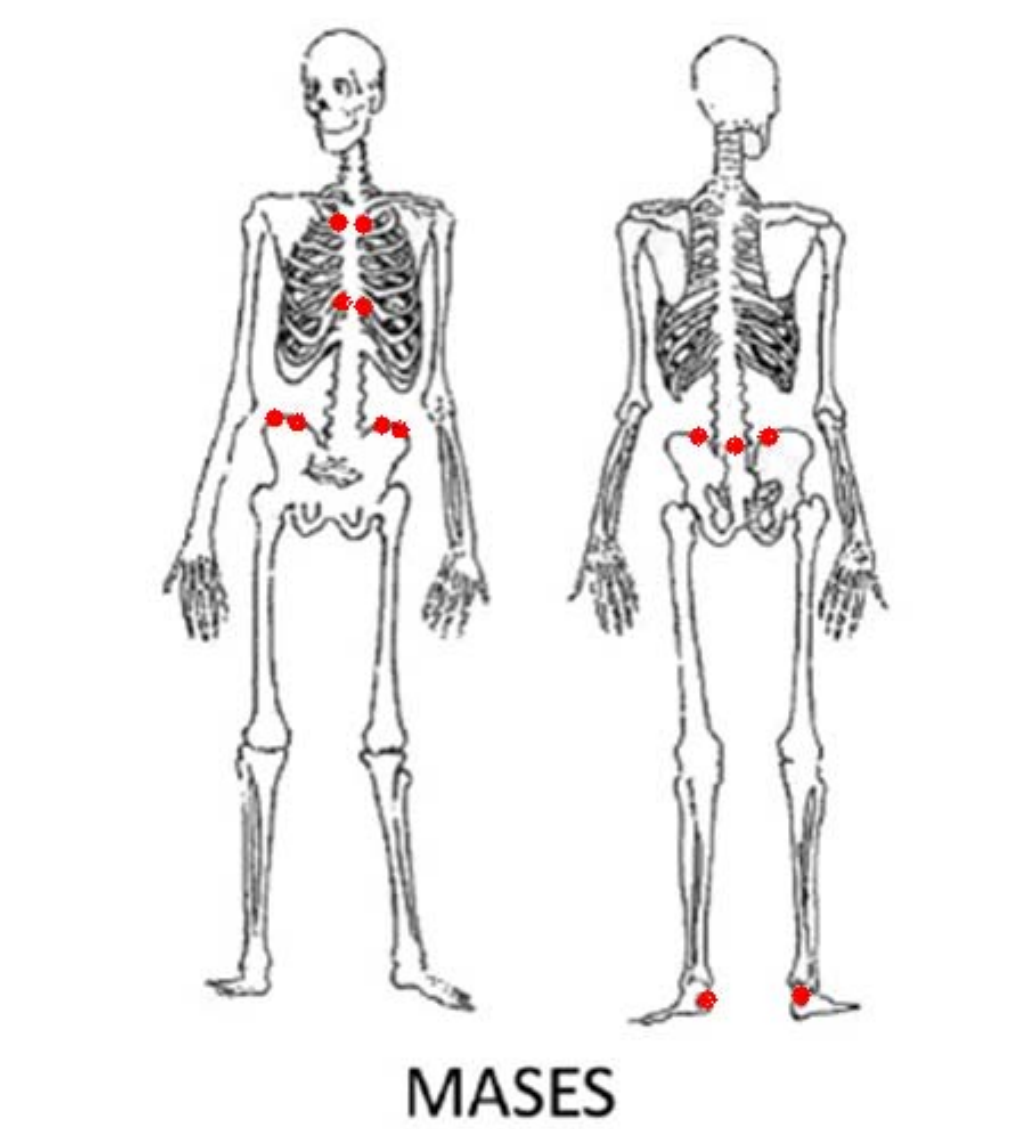


Valutazione entesi: indici entesitici



Indice entesitico di Mander: 68 entesi
Ogni entesi : 0 (nessun dolore) -3 (urlo di dolore)
Punteggio massimo : 204

Valutazione entesi: indici entesitici



Indice entesitico di Maastricht
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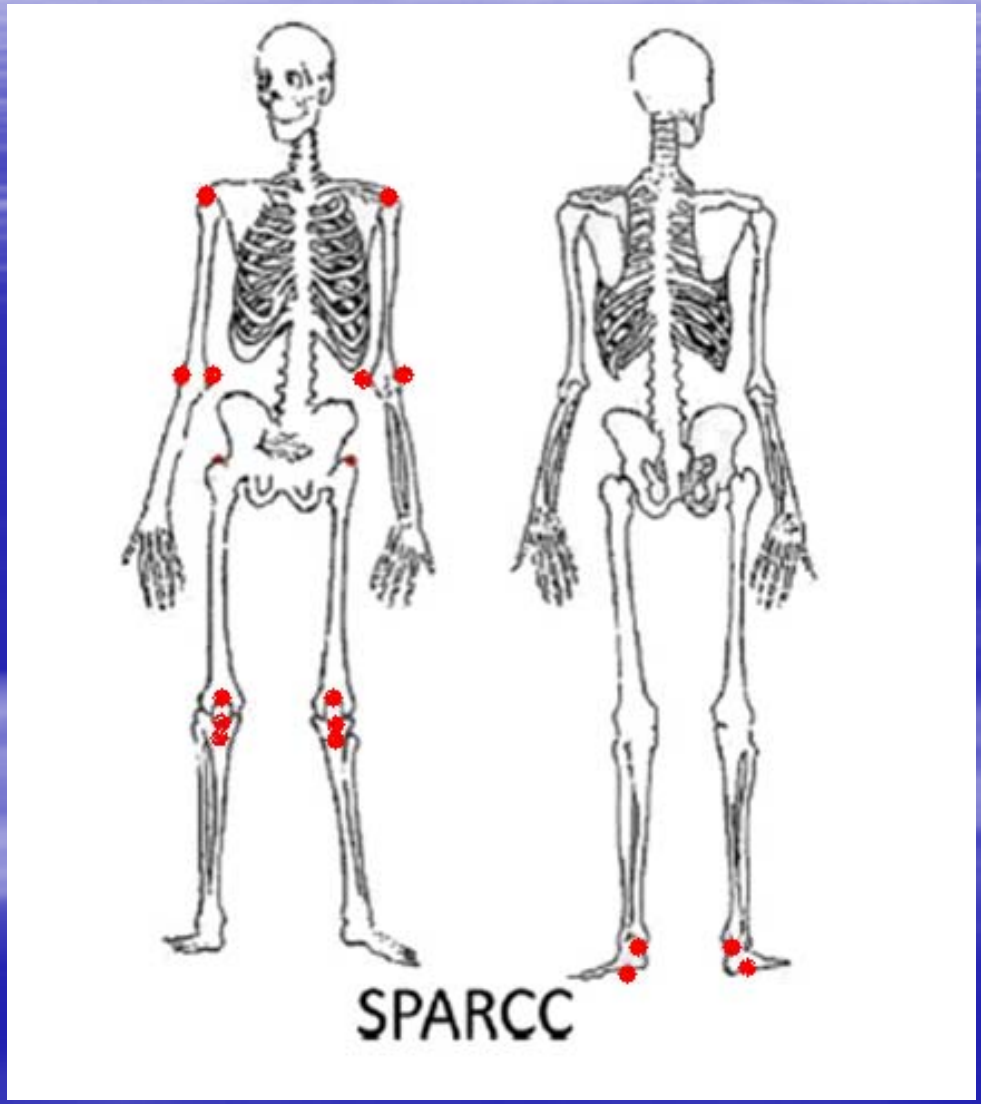
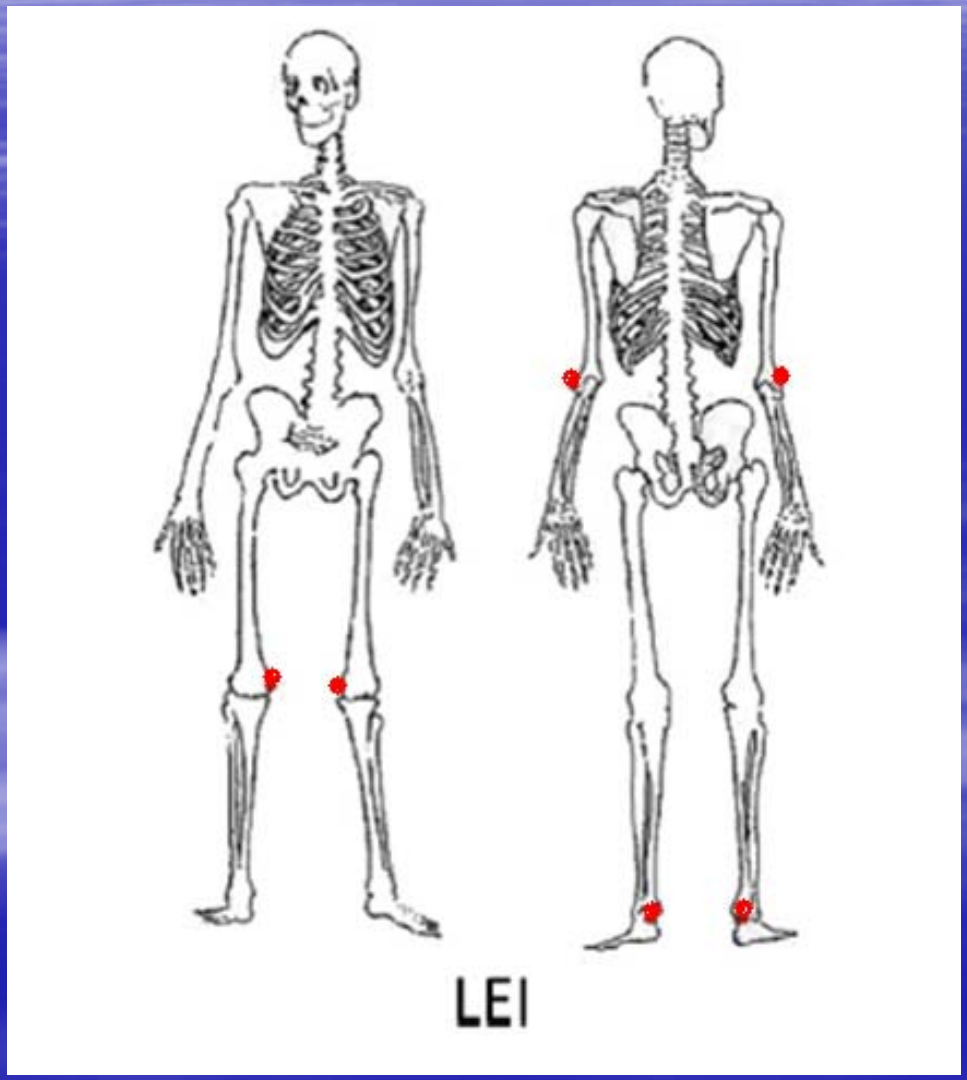
Valore massimo :13

Valutazione entesi: indici entesitici



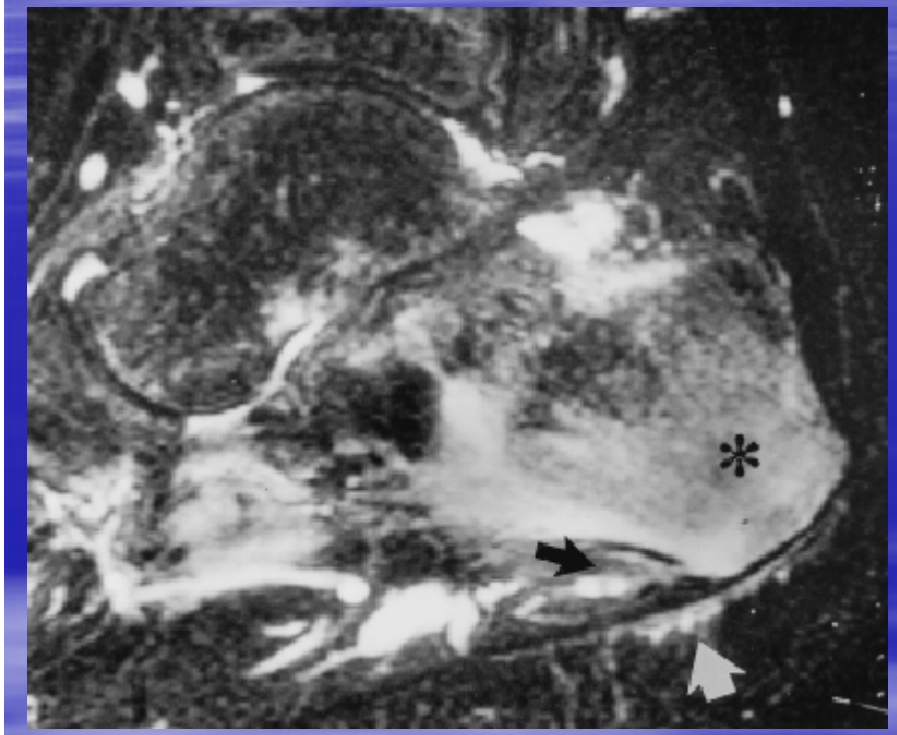
Indice entesitico della società canadese studio delle spondiliti
Numero entesi valutate :16
Punteggio massimo : 16

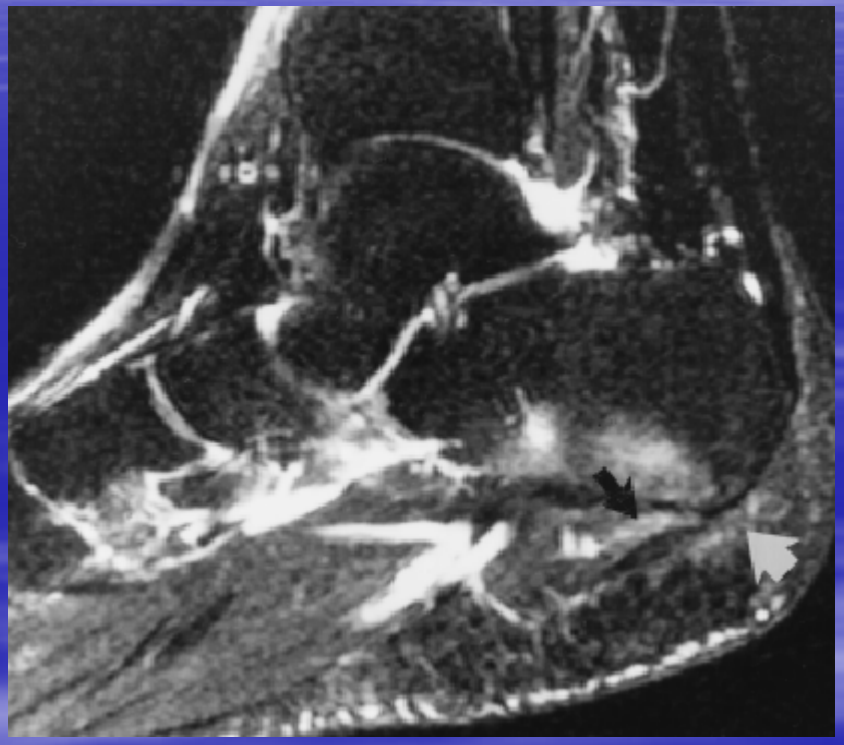
Valutazione entesi: indici entesitici



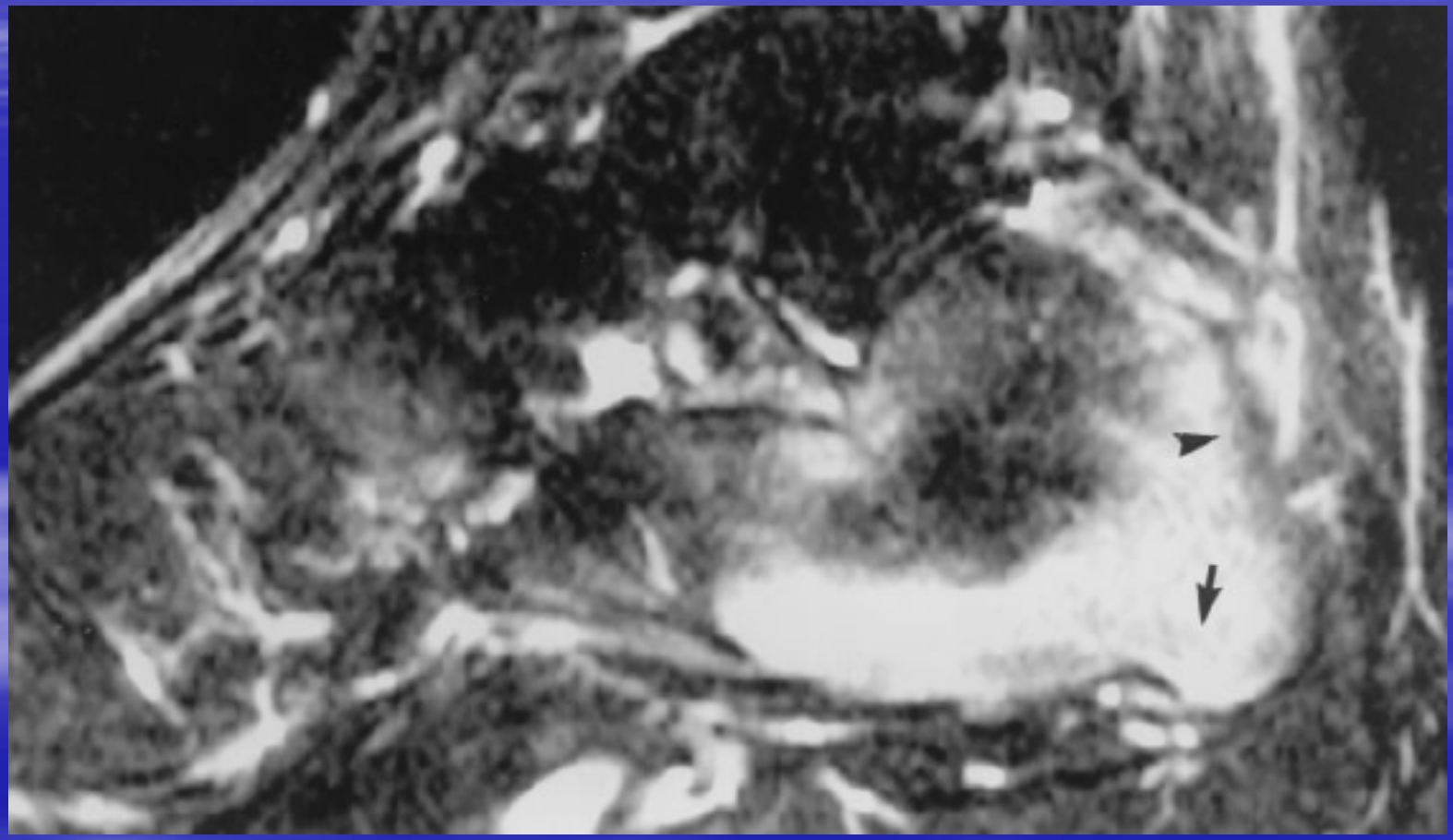
Indice entesitico di Leeds
Numero entesi valutate : 6
Valore massimo : 6

RM : entesite del calcagno con coinvolgimento della fascia plantare





RM : entesite della fascia plantare e dell’achilleo



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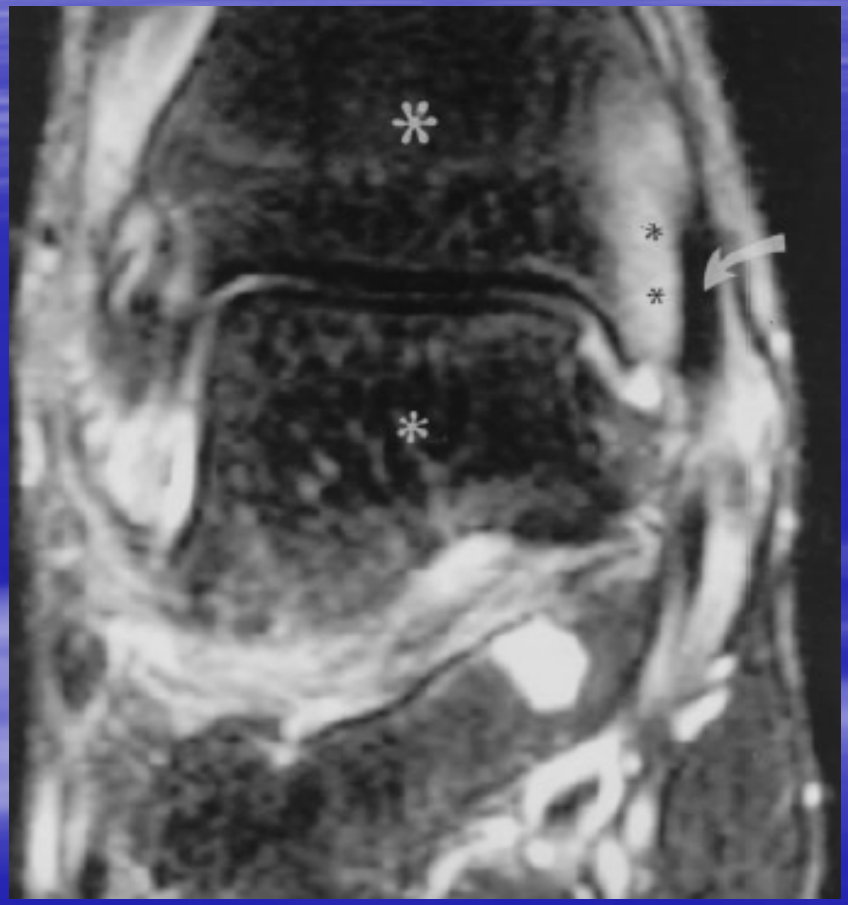
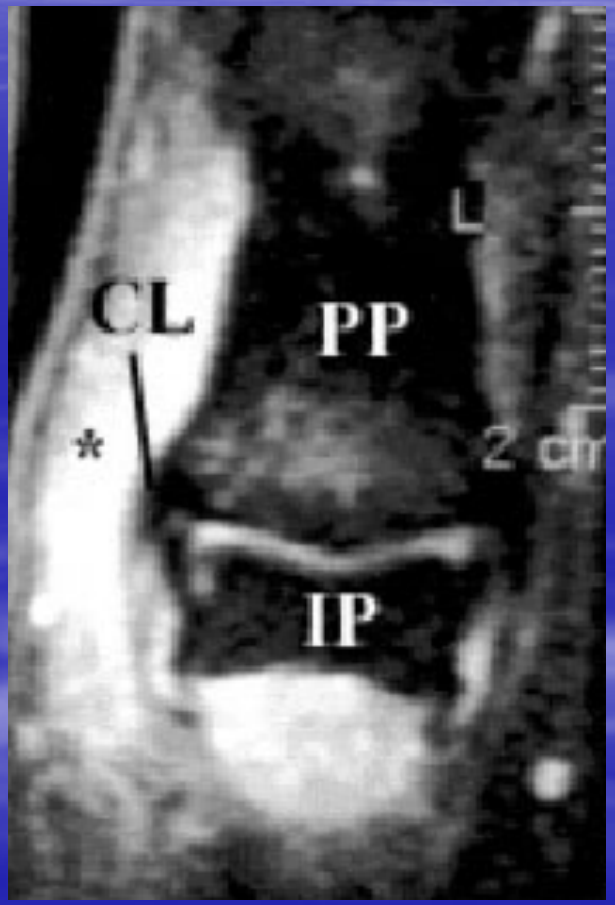
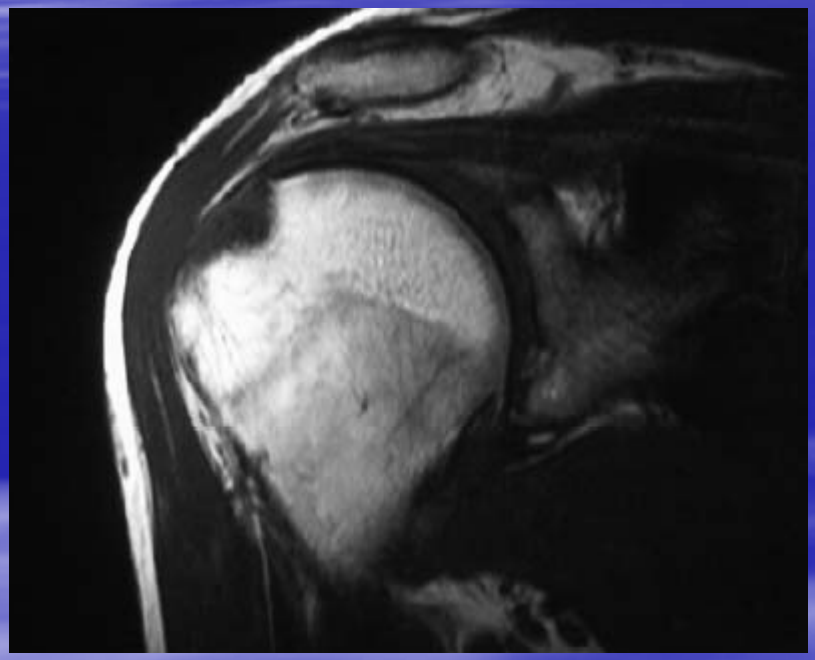
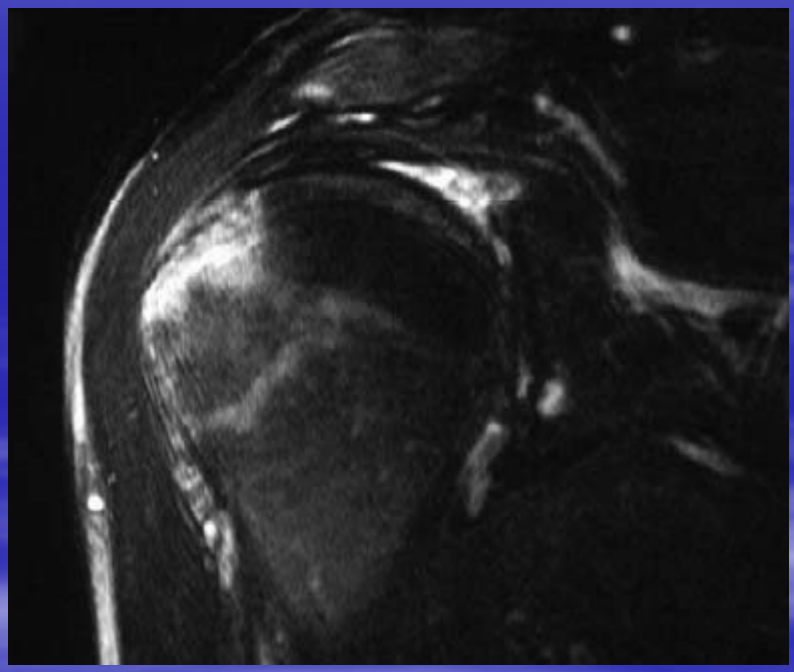


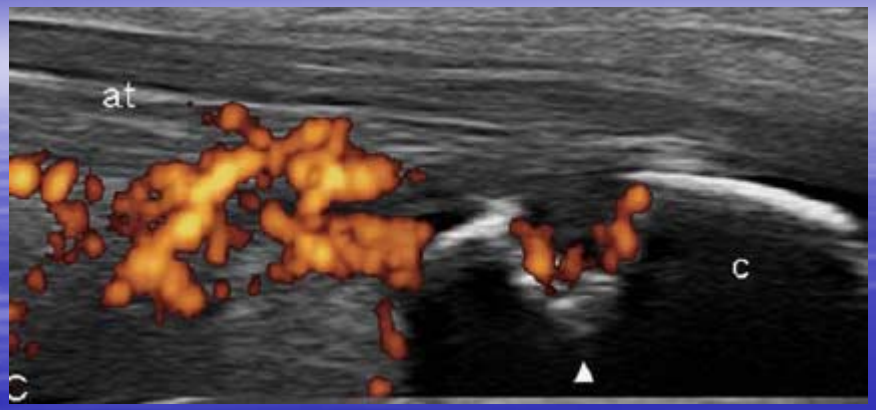


RM : entesite della inserzione sovraspinato

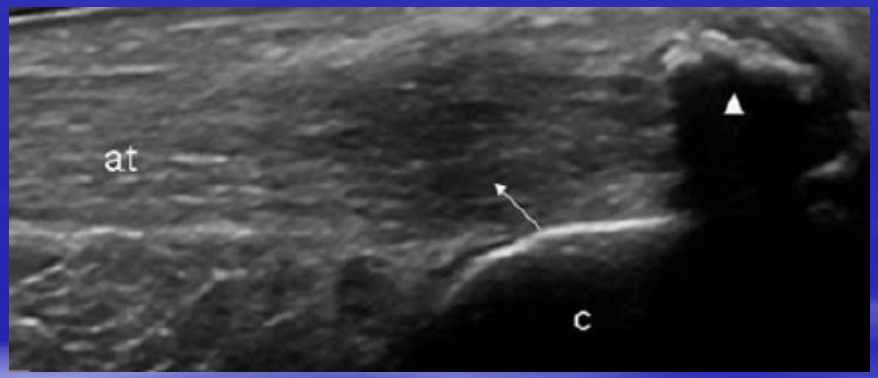




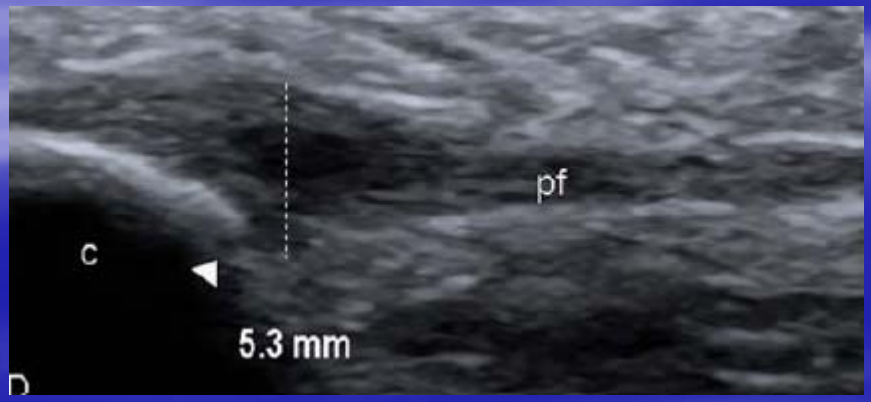
Ecografia : entesite tendine achilleo



Achilles tendon. Longitudinal scan. Large erosion of the calcaneous bone (arrowhead) with presence of PD within the tendon and inside the erosion.

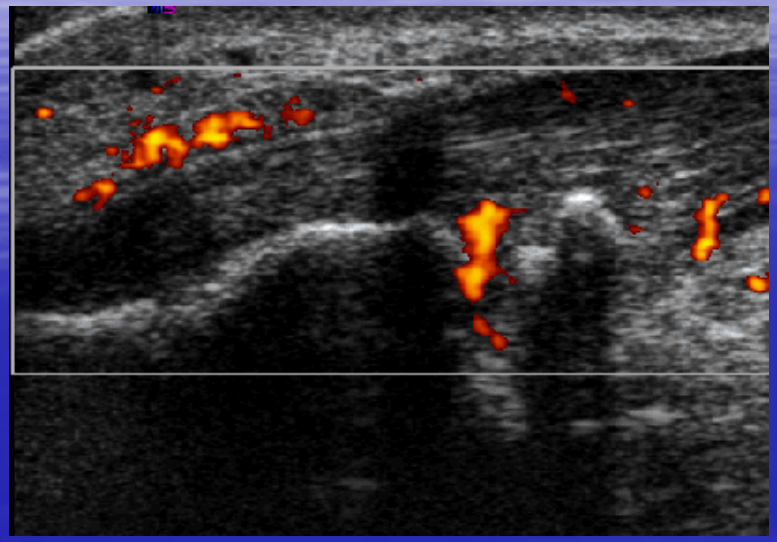


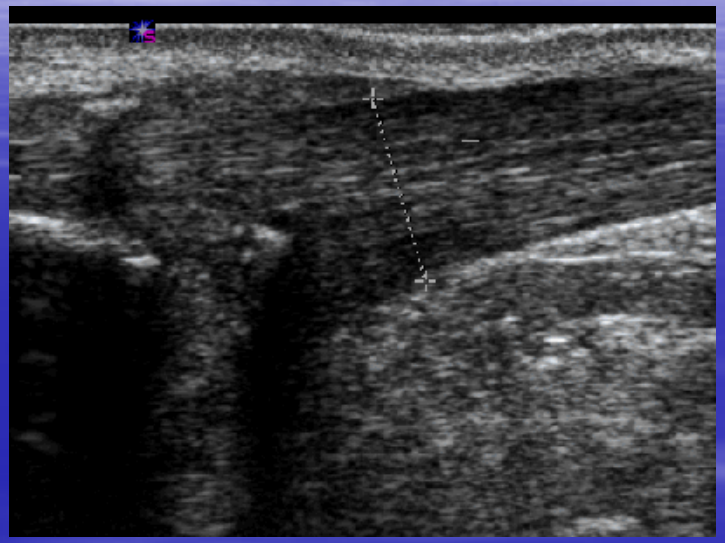
Large enthesophyte generating acoustic shadow which obstructs the complete visualization of the calcaneous bone (white arrowhead). Evident unhomogeneity of the structure of the tendon (arrow). The vertical white line indicates where measurements were taken.

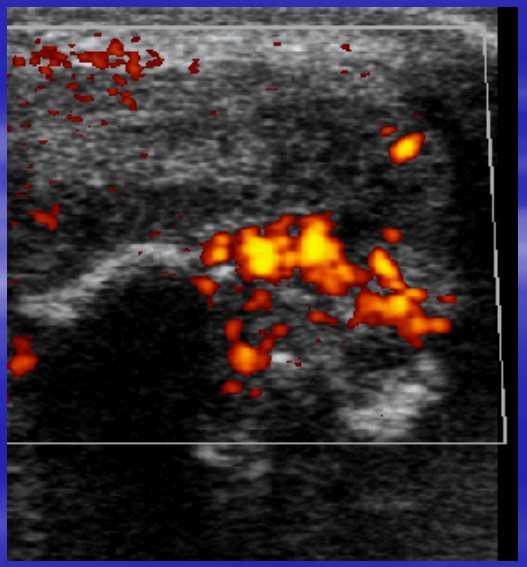


Plantar fascia. Longitudinal scan. Thickening of the insertion part of the plantar fascia with associated bone erosions (white arrowhead).

Tendinite Achillea : aspetto in scansione longitudinale e con PD







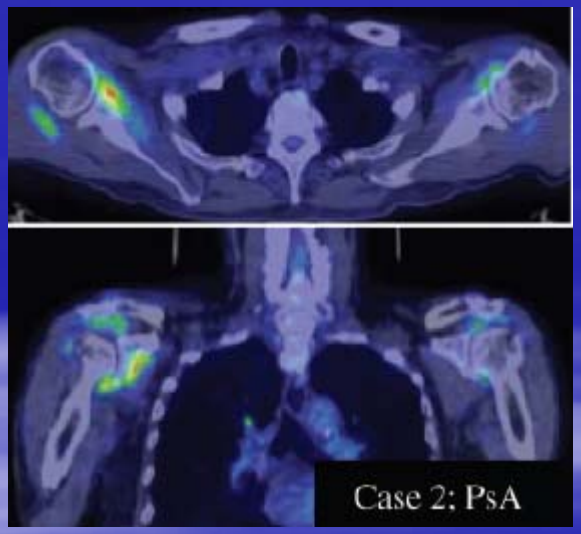
RHEUMATOLOGY

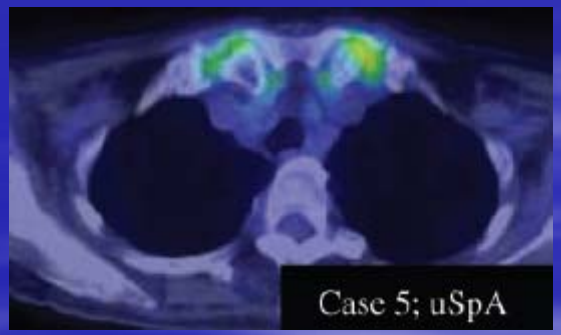
Rheumatology 2010;49:348–354
doi:10.1093/rheumatology/kep379
Advance Access publication 9 December 2009

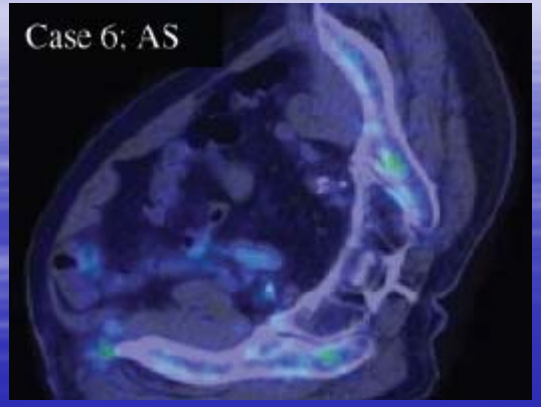
Concise report

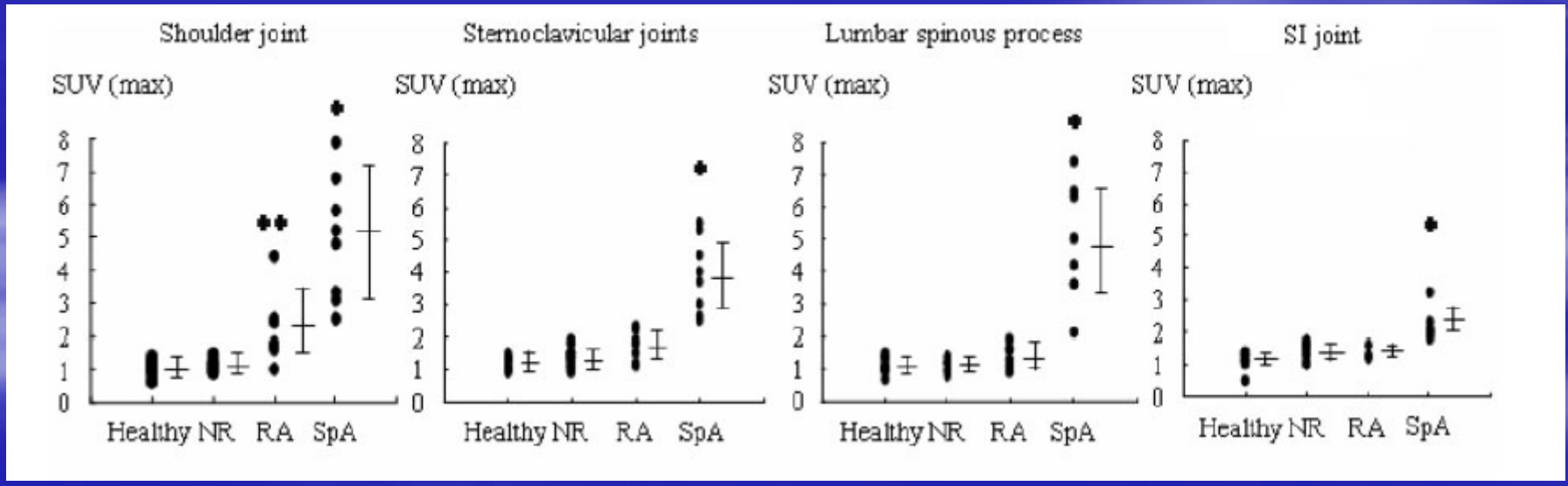
Positron emission tomography/computed tomography: a clinical tool for evaluation of enthesitis in patients with spondyloarthritides

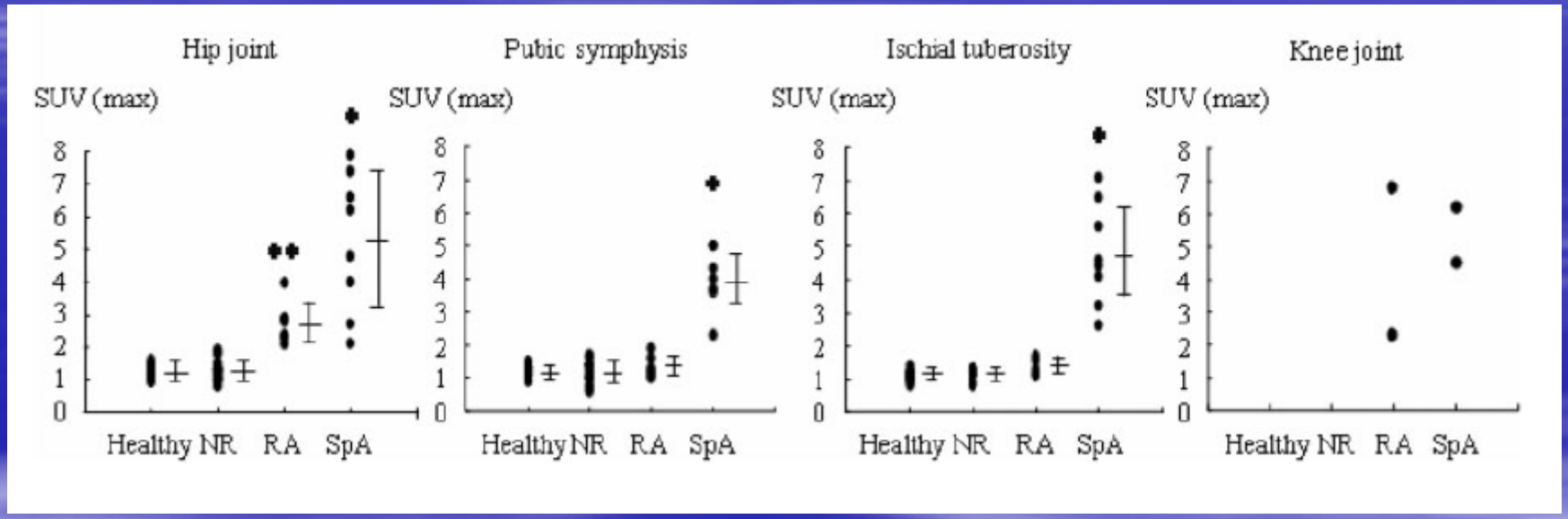
Yoshinori Taniguchi[1], Kaoru Arii[2], Yoshitaka Kumon[3], Mitsutaka Fukumoto[4], Takenao Ohnishi[4], Taro Horino[1], Toru Kagawa[1], Shigeto Kobayashi[5], Yasuhiro Ogawa[4] and Yoshio Terada[1]






Case 6: AS


Shoulder joint
Sternoclavicular joints
Lumbar spinous process
SI joint
SUV (max)
SUV (max)
SUV (max)
SUV (max)
0
1
2
3
4
5
6
7
8
Healthy
NR
RA
SpA


Hip joint
Pubic symphysis
Ischial tuberosity
Knee joint
SUV (max)
SUV (max)
SUV (max)
SUV (max)
8
7
6
5
4
3
2
1
0
Healthy
NR
RA
SpA

Lower limb enthesopathy in patients with psoriasis without clinical signs of arthropathy: a hospital-based case–control study

P Gisondi, I Tinazzi, G El-Dalati, et al.

Ann Rheum Dis 2008 67: 26-30 originally published online August 24, 2007
doi: 10.1136/ard.2007.075101

Pazienti e metodi

- Thirty patients with psoriasis and 30 controls underwent ultrasonographic evaluation of Achilles, quadriceps, patellar entheses and plantar aponeurosis.
- Ultrasonographic findings were scored according to the Glasgow Ultrasound Enthesitis Scoring System (GUESS).

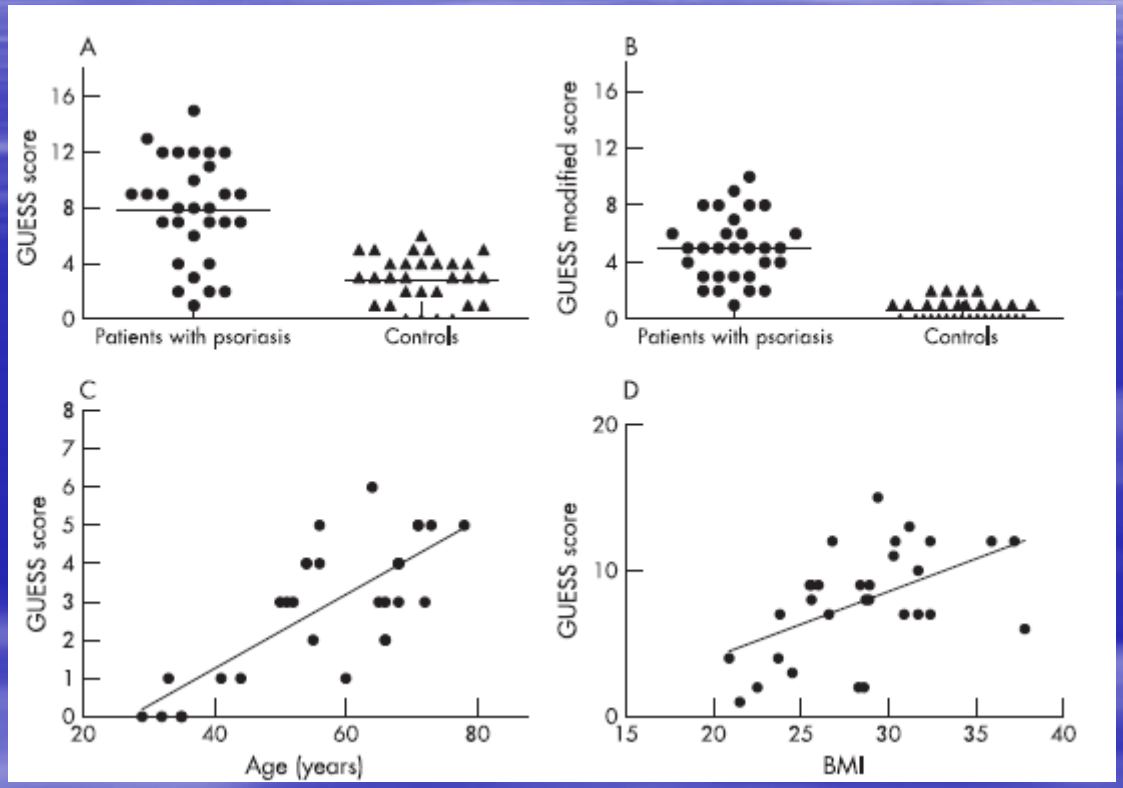
Risultati

- Mean GUESS score was significantly higher in patients with psoriasis as compared with controls: 7.9 (0.6) vs 2.9 (0.3); p,0.0001.
- In particular, the thickness of all tendons examined was significant higher in cases than in controls (p,0.0001), as well as the number of enthesophytes in all sites examined.

Risultati

- In both cases and controls, the GUESS score was directly correlated with age, body mass index and waist circumference.
- In contrast, the GUESS score was not correlated with the duration and severity of psoriasis according to the Psoriasis Area and Severity Index and body surface area involvement.

Risultati


A
GUESS score
16
12
8
4
0
Patients with psoriasis
Controls
B
GUESS modified score
16
12
8
4
0
Patients with psoriasis
Controls
C
GUESS score
8
7
6
5
4
3
2
1
0
20
40
60
80
Age (years)
D
GUESS score
20
10
0
15
20
25
30
35
40
BMI

Conclusioni

- Entheseal abnormalities can be documented by ultrasonography in clinically asymptomatic patients with psoriasis.
- These findings could be related to a subclinical entheseal psoriatic inflammation.
- We suggest close follow-up of patients with psoriasis with entheseal abnormalities for early diagnosis of psoriatic arthritis.

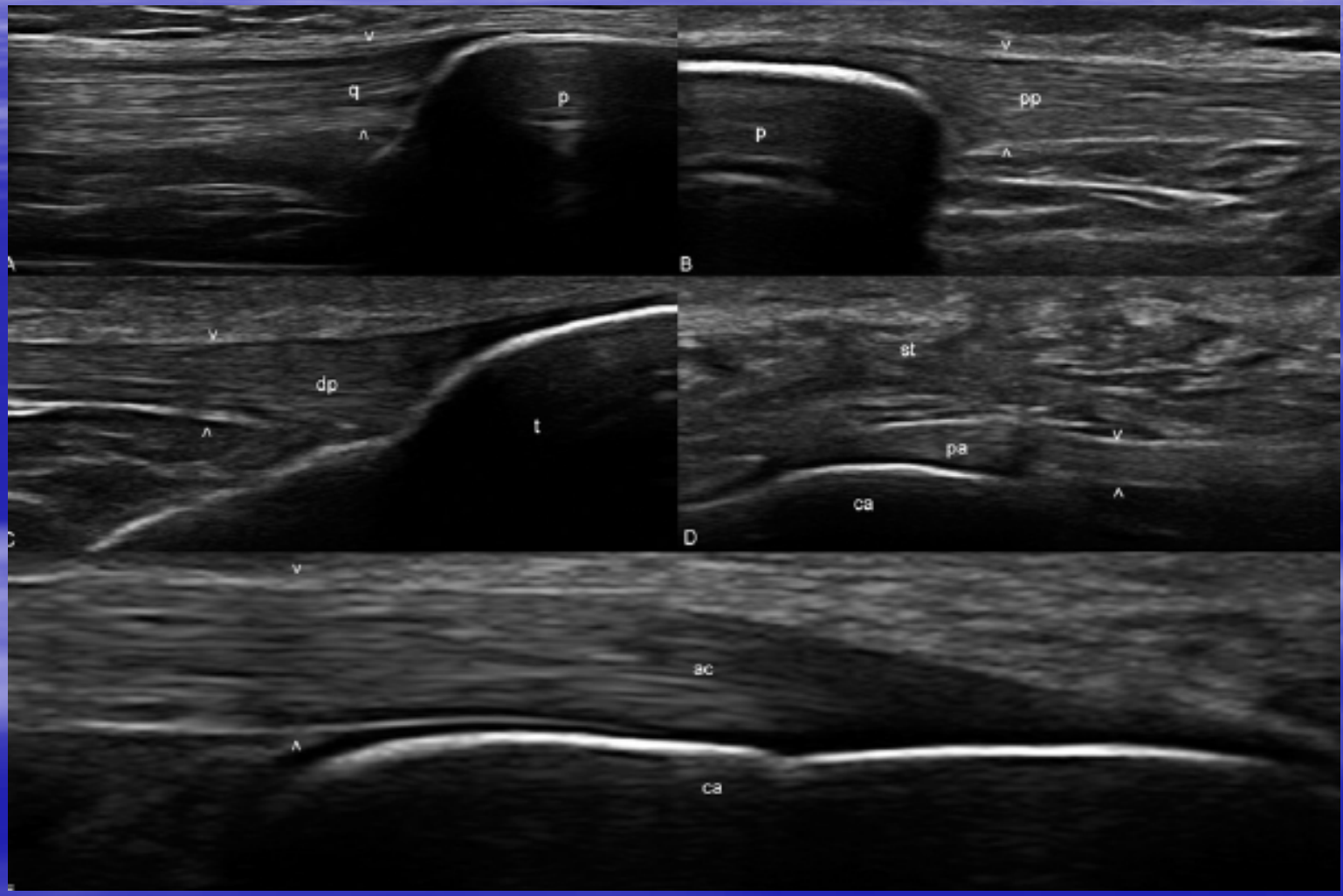
Subclinical Entheseal Involvement in Patients with Psoriasis: An Ultrasound Study

Marwin Gutierrez, MD,* Emilio Filippucci, MD,*
Rossella De Angelis, MD,* Fausto Salaffi, MD,* Giorgio Filosa, MD,†
Santiago Ruta, MD,‡ Chiara Bertolazzi, MD,* and Walter Grassi, MD*

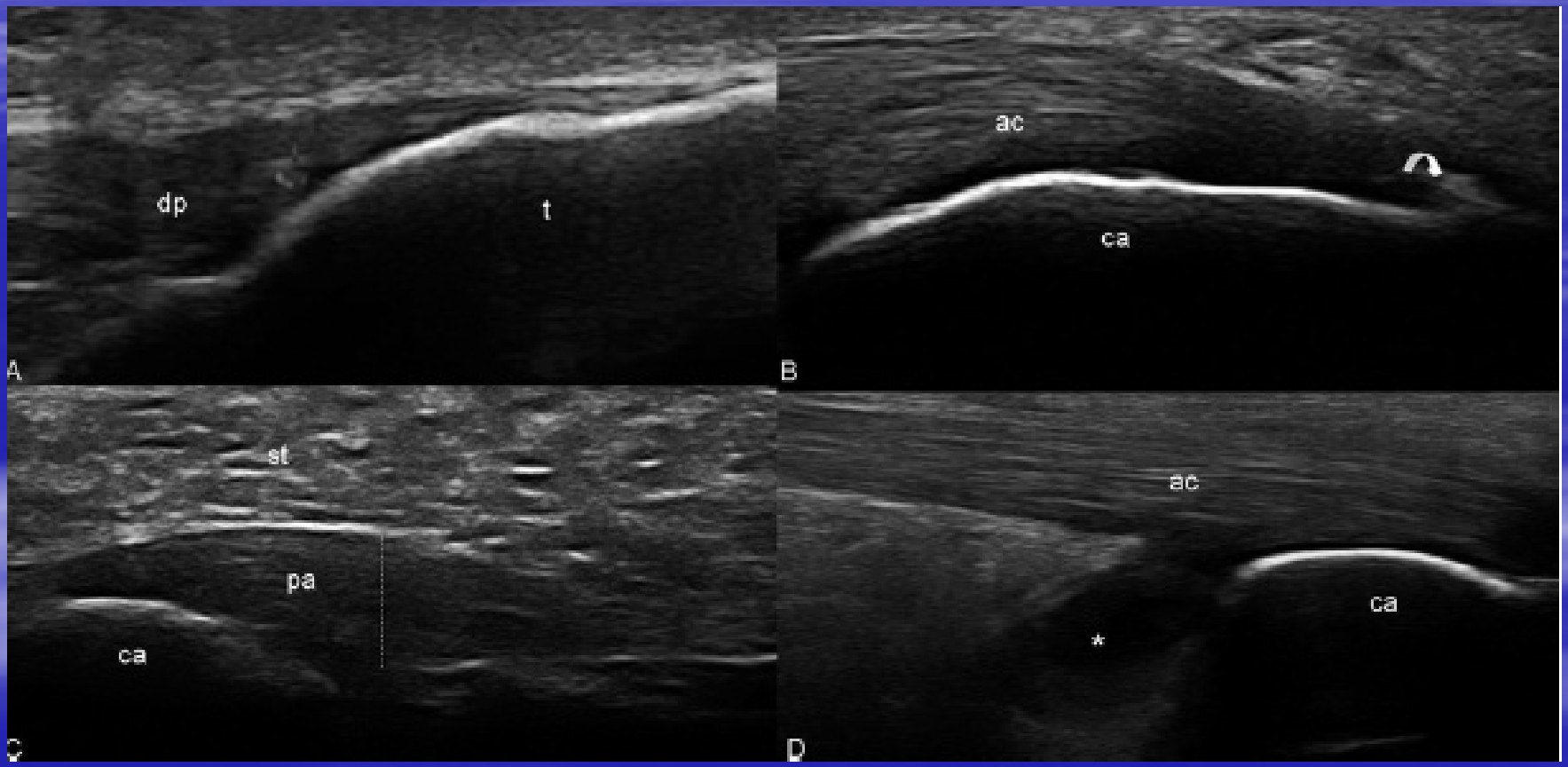
RESULTS

- A total of 450 entheses in 45 patients with psoriasis were evaluated by US.
- In 148 of 450 (32.9%) entheses, grayscale US found signs indicative of enthesopathy.
- In 4/450 (0.9%) entheses PD signal was detected.
- In the healthy population, US found signs of enthesopathy in 38 of 450 (8.4%) entheses and no PD signal was detected.
- The GUESS score was significantly higher in patients with psoriasis than in healthy controls (*P 0.0001).*

Normal entheseal insertions on longitudinal scan



Abnormalities



Distribution of the abnormalities

	Entheseal Thickness (patients/healthy controls)	Bursitis (patients/healthy controls)	Enthesophyte (patients/healthy controls)	Bone Erosion (patients/healthy controls)
Quadriceps enthesis (*n*)	9/7	0/0	20/6	0/0
Proximal patellar enthesis (*n*)	21/5	0/0	10/5	0/0
Distal patellar enthesis (*n*)	31/3	0/0	8/0	2/0
Achilles enthesis (*n*)	9/3	4/1	27/8	3/0
Plantar aponeurosis enthesis (*n*)	3/0	0/0	1/0	0/0
Total[b]	73/18	4/1	66/19	5/0

CONCLUSIONS

- Both grayscale US and PD findings indicative of enthesopathy were more frequent in patients with psoriasis.
- The US ability to detect signs of subclinical enthesopathy should be the object of longitudinal investigations to define its value in predicting the clinical onset of psoriatic arthritis.

Scintigrafia

- Scintigraphy has been shown to be effective at detecting synovial inflammation and correlation has been shown between scintigraphical evidence of synovitis and later progression of joint erosions.
- However, the range of radiotracers used and the varying methodologies reported in the literature make comparisons of existing trials difficult.

Early Psoriatic Arthritis: The Clinical Spectrum

RAFFAELE SCARPA, ALBERTO CUOCOLO, ROSARIO PELUSO, MARIANGELA ATTENO, PIETRO GISONNI, SALVATORE IERVOLINO, MATTEO NICOLA DARIO Di MINNO, EMANUELE NICOLAI, MARCO SALVATORE, and ANTONIO del PUENTE

J Rheumatol 2008;35:137–41

Metodi

- 47 consecutive patients: 29 had definite PsA and 18 had the “sine psoriasis” subset.
- Inclusion criteria were articular and/or entheseal involvement of less 12 weeks’ duration and the exclusive use, before enrollment, of AINS drugs to control articular symptoms.
- All patients underwent clinical examination, blood tests, total-body bone scintigraphy, articular ultrasonography, and radiography of clinically involved joints and/or entheses.

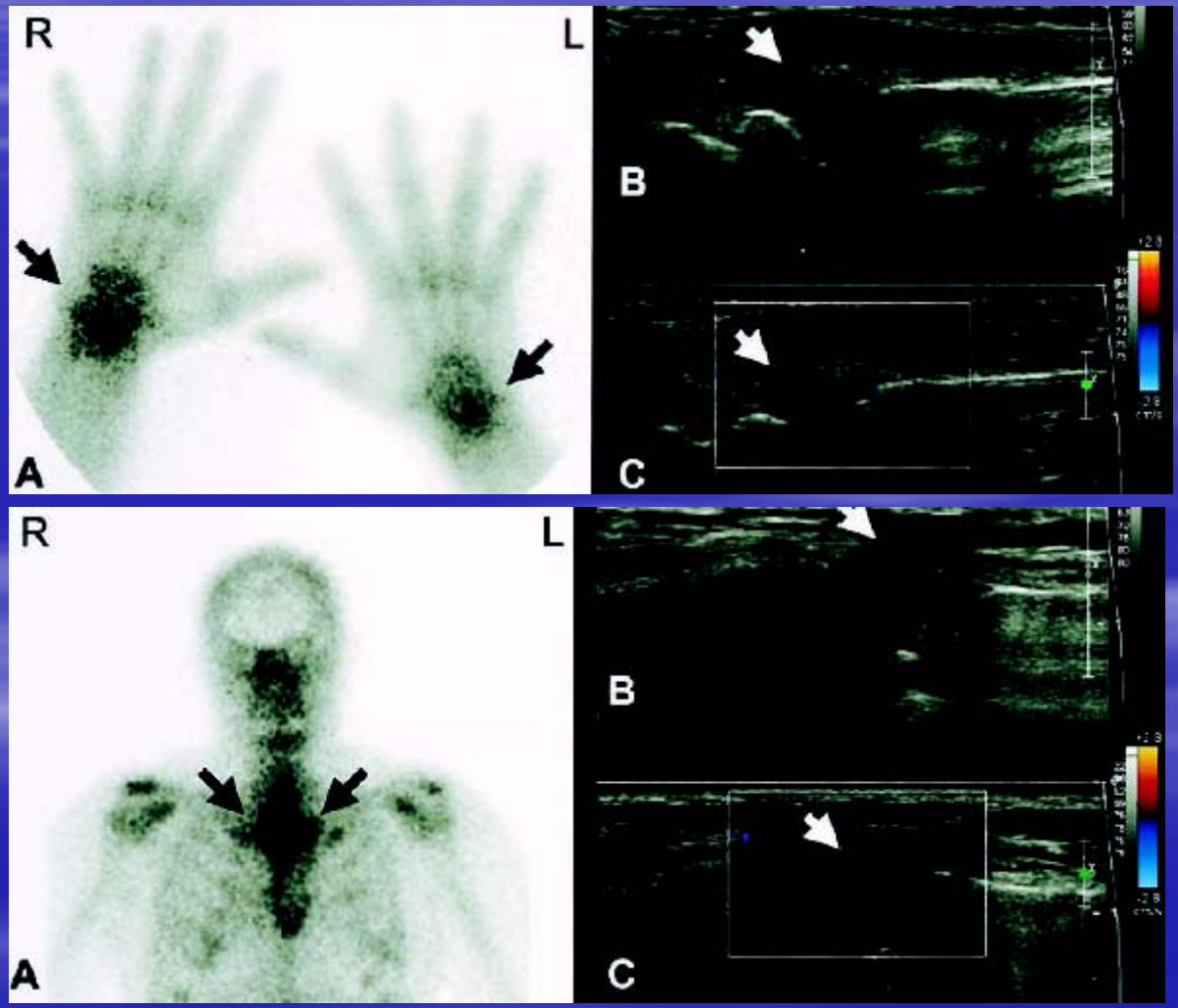
Risultati : scintigrafia

Site, n	Clinical Examination	Bone Scintigraphy
Proximal interphalangeal	20	26
Distal interphalangeal	18	26
Knee	14	29
Sacroiliac	10	28
Ankle	9	15
Sternoclavicular	3	34
Metatarsophalangeal	0	18
Metacarpophalangeal	0	10
Total	81	186

Scintigrafia : entesi

Site, n	Clinical Examination	Bone Scintigraphy
Calcaneal	14	38
Paravertebral	6	24
Iliac	4	13
Femur	0	4
Total	24	103

Clinicamente silenti



Conclusioni

- Early PsA is an entheso-articular syndrome with a consistent risk of clinical progression.
- Its marked entheseal involvement is a distinctive clinical aspect that helps to discriminate it from other conditions observed at their onset, such as RA
- Adequate clinical or biological indices are still needed to monitor this condition. The PASI and/or PsARC and measurements of ESR and CRP are not completely appropriate to measure its outcome.

Quale imaging ?

- Nessuna : scelta possibile non linee guida sull'imaging periferico nelle SpA Scarsa sensibilità rispetto all'imaging.
- RX : dimostrazione di lesioni stabilizzate, scarsa sensibilità nelle lesioni iniziali, correla come indice con il dato clinico
- MRI : dimostrazione di lesioni acute, scarsa sensibilità per il riconoscimento di calcificazioni, limitazioni dalla scarsa disponibilità, non radiazioni, correla con il dato clinico.

SPONDILITE ANCHILOSANTE (SA): DEFINIZIONE

- Malattia reumatica sistemica cronica
- Predilezione per lo scheletro assiale
- Infiammazione nella sede di inserzione dei legamenti nell'osso (entesi)

SA: DEFINIZIONE

- Aspetto peculiare è l'infiammazione delle articolazioni sacro-iliache
- Ha una forte predisposizione genetica legata alla presenza dell'HLA-B27

Probabilità di avere la SA in base ai sintomi

Dolore cronico alla schiena

5%

Dolore infiammatorio alla schiena

14%

Aspetti clinici di SpA
(Entesite, storia famigliare, oligoartrite AAII, uveite ecc.)

30–70%

Criteri classificativi

ASAS classification criteria for Axial SpA

In patients with ≥3 months back pain and age at onset <45 years

Sacroiliitis on imaging* **plus** **≥1 SpA feature#**

OR

HLA-B27 **plus** **≥2 other SpA features#**

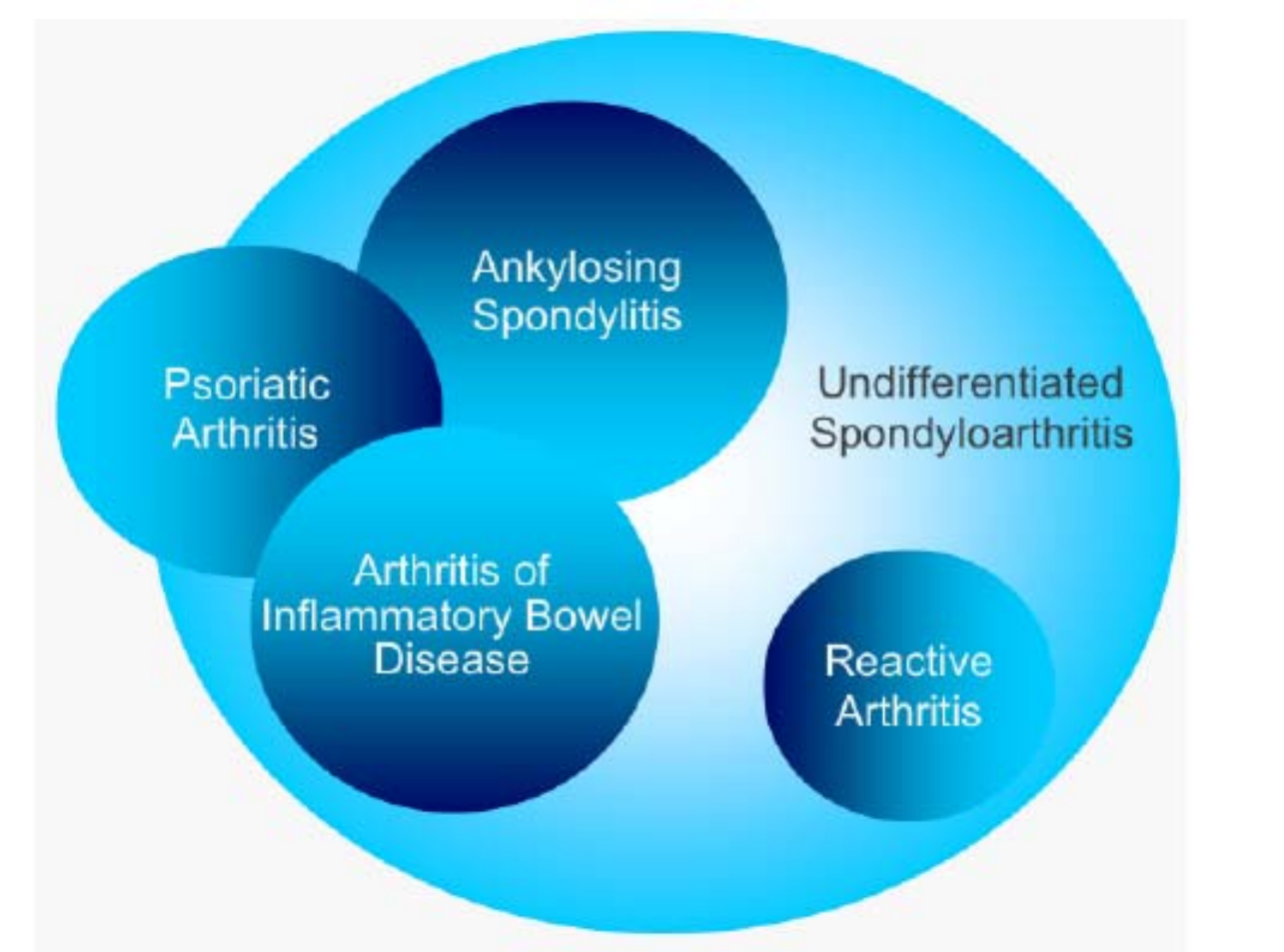
#SpA features

- Inflammatory back pain
- Arthritis
- Enthesitis (heel)
- Uveitis
- Dactylitis
- Psoriasis
- Crohn's/colitis
- Good response to NSAIDs
- Family history for spa
- HLA-B27
- Elevated CRP

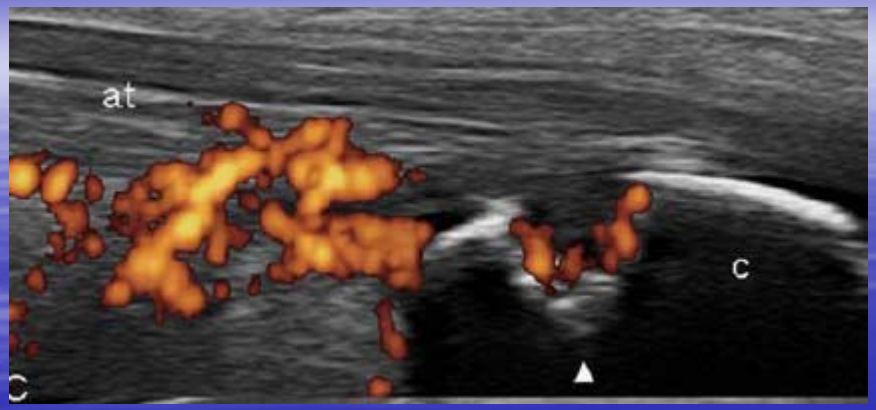
*Sacroiliitis on imaging

- Active (acute) inflammation on MRI highly suggestive of sacroiliitis associated with SpA
- Definite radiographic sacroiliitis according to mod NY criteria

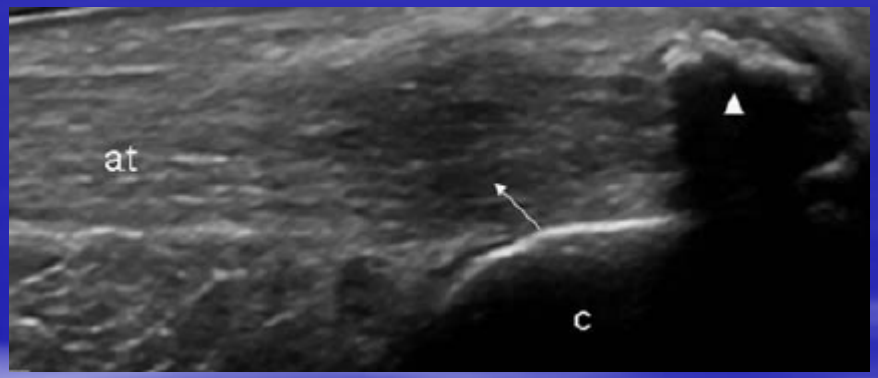
Forme di spondiloartriti (SpA)



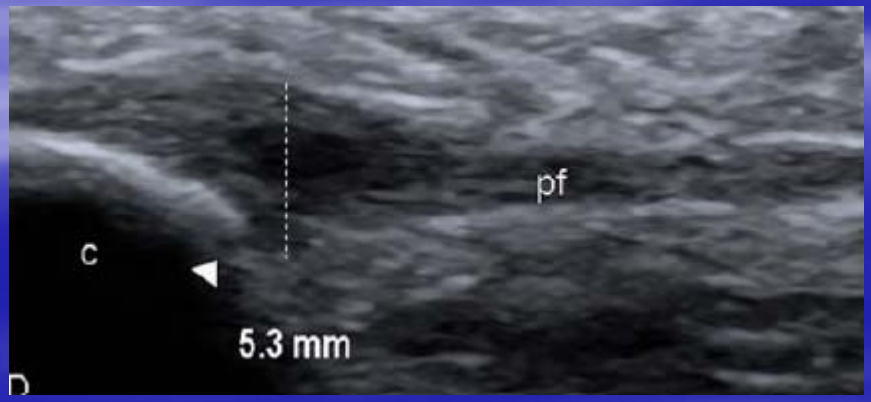
Ecografia : entesite tendine achilleo



Achilles tendon. Longitudinal scan. Large erosion of the calcaneous bone (arrowhead) with presence of PD within the tendon and inside the erosion.

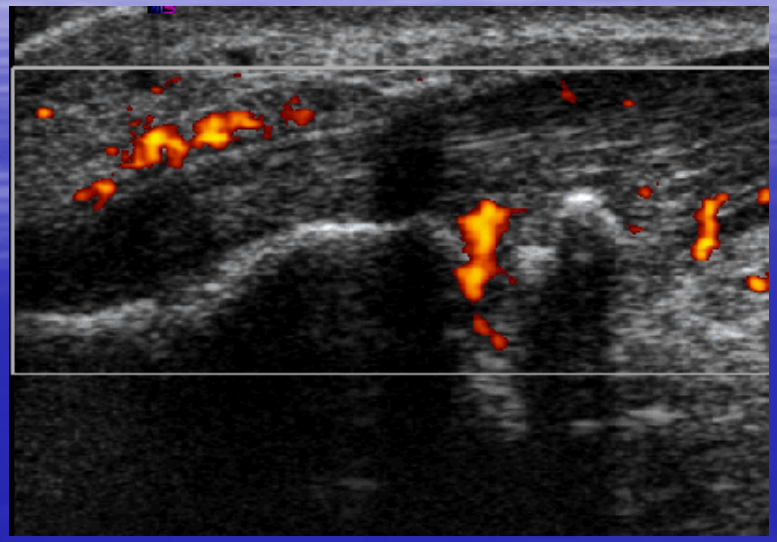


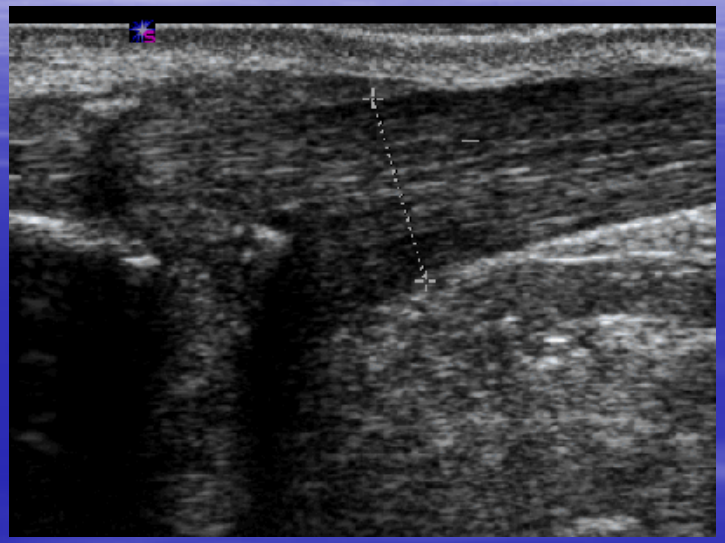
Large enthesophyte generating acoustic shadow which obstructs the complete visualization of the calcaneous bone (white arrowhead). Evident unhomogeneity of the structure of the tendon (arrow). The vertical white line indicates where measurements were taken.

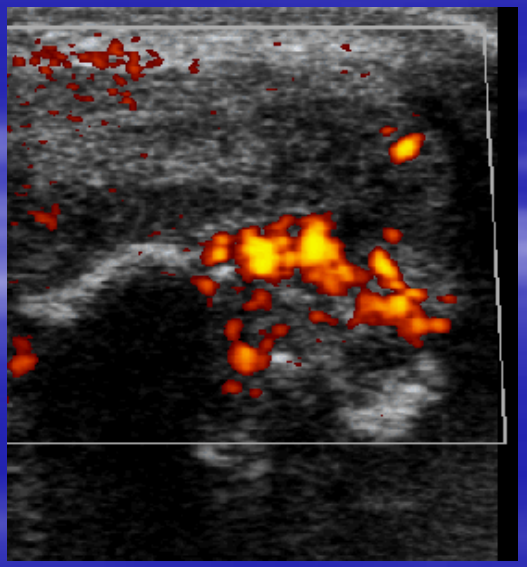


Plantar fascia. Longitudinal scan. Thickening of the insertion part of the plantar fascia with associated bone erosions (white arrowhead).

Tendinite Achillea : aspetto in scansione longitudinale e con PD







Epidemiologia entesite

- In reactive arthritis (ReA), peripheral enthesitis has been found in 33–58% of cases.
- In a Norwegian epidemiological study on ReA, enthesitis was infrequent and seen in 8% 186 patients.
- In another study, 5 out of 11 patients with ReA from a cohort of 84 patients with Salmonella enteritidis food poisoning had peripheral enthesitis.
- In two of these, peripheral enthesitis was the only clinical manifestation of the salmonella induced ReA and the term ‘reactive enthesitis’ was proposed.

Epidemiologia entesite

- Oriente found peripheral enthesitis in 20% of his patients with psoriatic arthritis (PsA), with a peak value of 30% in the spondylitic pattern.
- In our study on the prevalence and the clinical spectrum of musculoskeletal manifestations in an inception cohort of patients with inflammatory bowel disease found a frequency of enthesitis of 10% (Salvarani et al.)

Epidemiologia entesite

- The clinical spectrum of uSpA is wide due to the various combinations of clinical and radiological manifestations of SpA,
- I.e. peripheral enthesitis, peripheral arthritis, dactylitis, inflammatory spinal pain, sacroiliitis, aortic regurgitation with conduction disturbances, uveitis and conjunctivitis.
- Each of these may also occur alone as the only clinical manifestation of the B27-associated disease process.

Epidemiologia entesite

- Usually, peripheral enthesitis co-exists with other clinical manifestations of SpA, especially peripheral arthritis and dactylitis.
- This situation is more frequent in juvenile-onset SpA where the enthesopathy and arthropathy syndrome has been identified.

Epidemiologia entesite

- There are uSpA patients presenting isolated peripheral enthesitis.
- In such cases, HLA typing may be useful for an early diagnosis of SpA.
- Long-lasting isolated HLA-B27-associated peripheral enthesitis has been described in children and adolescents, young and middle-aged adults, and in older individuals.

Epidemiologia entesite

- In a studies by Olivieri on consecutive patients with uSpA seen in their tertiary referral centres, isolated peripheral enthesitis was seen in two (14%) out of 14 patients with juvenile-onset disease, and two (9%) out of 23 patients with late-onset disease.
- There is also a subset of PsA with isolated enthesitis and/or dactylitis (Salvarani et al.)