

1

· · · ·

:

: 93 4 97 12

30 (: =22:8)

20

: 30 29 (97%)

T2

가

, 1

, T1

20

8 (40%),

8 (40%),

4 (20%)

2.7ml ± 1.7(: 0.2 18.9ml)

1.0ml ± 0.77(: 0.1-3ml)

(p<0.01).

:

1993 4

1997 12

(1-10).

가

32

2

30

2

15

7.6

22:8

가

가

, 30

3

가 (11,12),

6

가

(Frog leg view)

, 1

1.5Tesla Magnetom 63SP(Siemens,

Erlangen, Germany)

T1

(TR/TE = 500/15msec)

T2

(TR/TE = 1800/80 msec) . 20 , , ±2

T1 , 20 ,

4 -T1

(FOV) 140-180mm, (matrix number) 256

× 256, 0.3mm, 3mm body coil

30

가 T1

T2 29

1 T2

가

(fat) -T1 4

20

Photoshop 5.0() 8 (40%) (Fig. 2), 8 (40%) (Fig. 3), 4 (20%) (Fig. 4)

, Photoshop 5.0 T2

± 2

(Fig. 1).

3ml) 가 0.77 ml 1.0 ml(: 0.1-2.5ml(± 2

0.2ml 18.9ml

2.7ml ± 1.7 30 12

paired T-test (40%) (2.5ml)

, 12 3.9ml ± 1.25(: 2.6-18.9ml)

Kruskal-Wallis one way ANOVA 18 (60%)

0.9ml ± 0.51(: 0.2-2ml)

paired T-

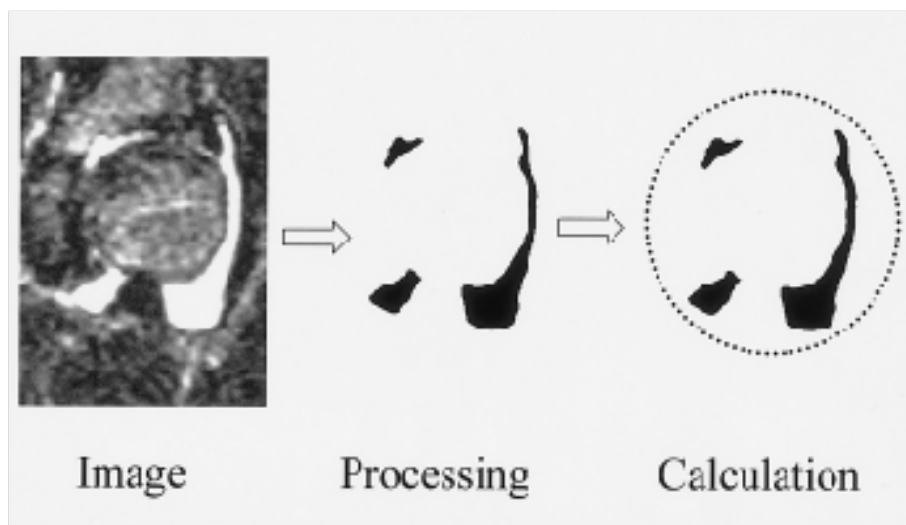


Fig. 1. Diagram for the measurement of joint effusion.

Coronal T2-weighted image shows considerable amount of joint effusion in the left hip. Using graphic software(Photoshop), MR image is converted into black and white image, and then we calculate black area. The volume of each image is measured by multiplying black area by 3.3mm.

test

($p < 0.01$).

2

1.5 ml \pm 1.25,

1.4 ml \pm 0.99,

4.3 ml \pm 0.54

ANOVA

, Kruskal-Wallis one way

(medial joint space)

(1-3).

($p < 0.05$).

(capsule)

(4-8).

Jacobson

(14)

5ml,

2ml,

1 ml

10

가

가

Calvé -Perthes

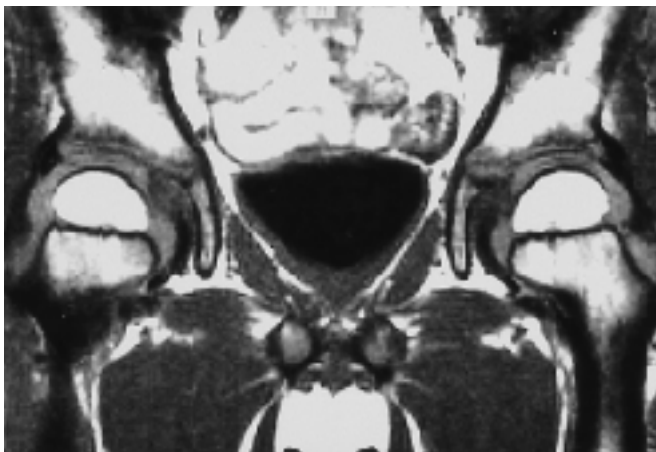
Legg-

가

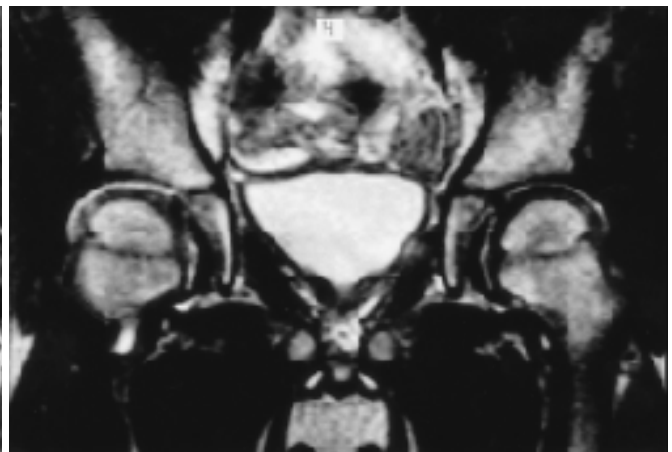
가

(septic arthritis)

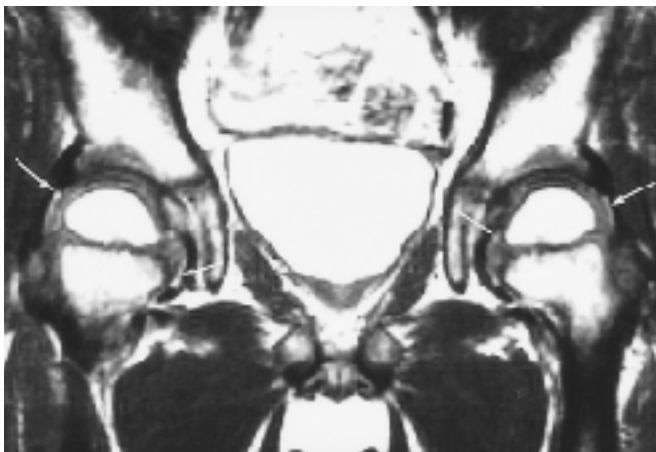
(11,13),



A



B



C

Fig. 2. Minimal synovial enhancement pattern.

A. Coronal T1-weighted image of a 5-year-old boy with right hip pain shows high signal intensity in the both femoral epiphysis.

B. Coronal T2-weighted image shows intermediate signal intensity in the both femoral epiphysis.

C. Coronal T1-weighted image after gadolinium injection demonstrates focal minimal enhancement of synovial membrane in the both hip joints (arrows).

bias가 가
Ranner (11)

, Toby (12) 8 2

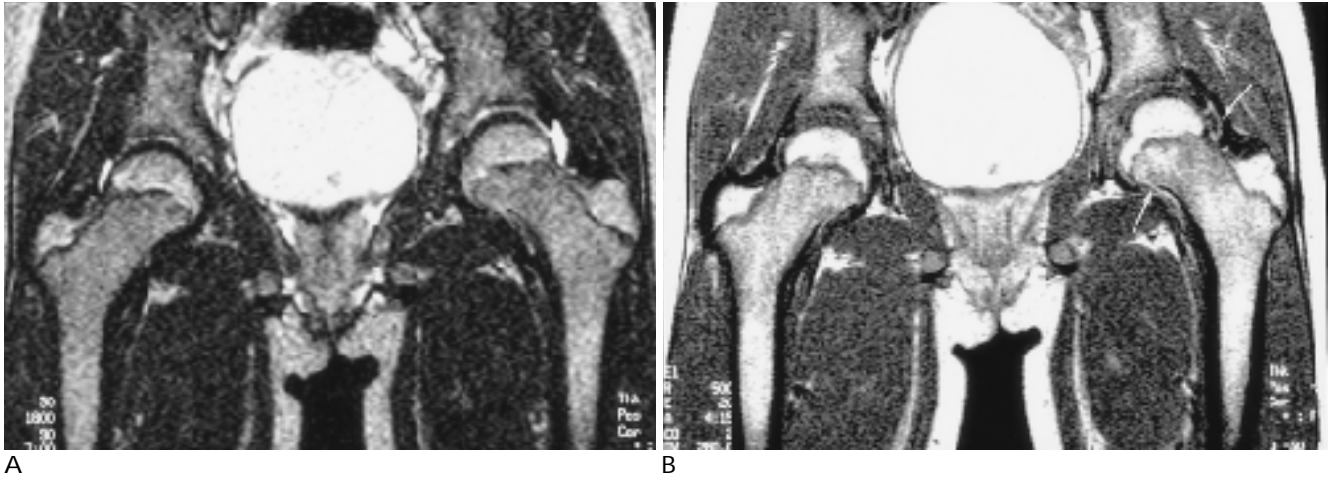


Fig. 3. Moderate synovial enhancement pattern.

A. Coronal T2-weighted image of an 11-year-old girl with left hip pain shows intermediate signal intensity in the left femoral epiphysis and small amount of hip joint effusion.

B. Coronal T1-weighted image after gadolinium injection demonstrates moderate enhancement of synovial membrane in the left hip joint (arrows).

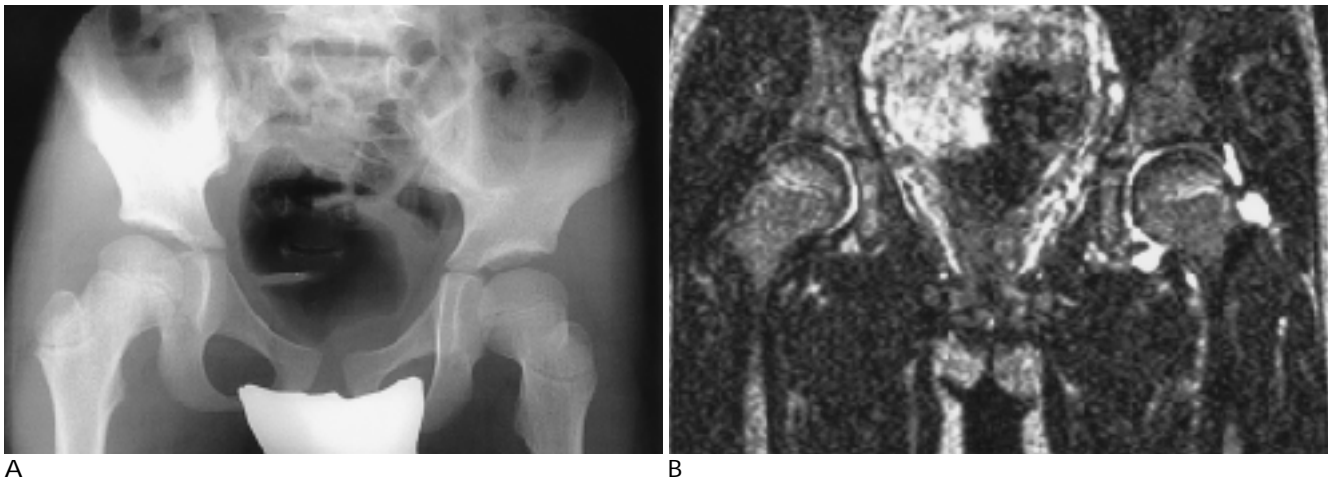


Fig. 4. Strong synovial enhancement pattern.

A. Hip anteroposterior radiography of an 8-year-old boy with left hip pain shows tilting of pelvis due to hip pain and normal left femoral epiphysis.

B. Coronal T2-weighted image shows large amount of joint effusion in the left hip compared to contralateral hip.

C. Coronal T1-weighted image after gadolinium injection demonstrates strong enhancement of synovial membrane in the left hip joint (arrows).



6 . 가 , 3

-T1 가 ,

4 가 ,

1 가 ,

T2 가 ,

T1 가 ,

Hasegawa (15) Sutherland .

(16) 가 ,

(transient epiphyseal ischemia) 가 (reversible ischemia) 1 ,

(preosteonecrosis marrow edema) (nonspecific focal edema) T2 ,

T1 가 ,

(pattern) 가 ,

가 ,

가 ,

가 ,

가 ,

60% 20% Gradient , partial volume averaging 가

3mm 가

25 81% (11,12).

(aspiration) 가 ,

T2 ,

1 ml 가 2.5ml

2.7ml ,

40% 60% ,

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MR Findings of Transient Synovitis of the Hip¹

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Purpose : To evaluate the MR findings of transient synovitis of the hip in children.

Materials and Methods : Between 1993 and 1997, MR imaging was performed in 30 children (male:female = 22:8) in whom transient synovitis had been clinically diagnosed. In 20 of these 30 patients, Gd-enhanced study was also performed. The signal intensity of bone marrow of the femur, the synovial enhancement pattern and the amount of hip joint effusion in affected hips were evaluated; the last-mentioned was determined using the volume measurement method.

Results : In 29 patients (97%), no abnormal signal intensity was seen in bone marrow of the femur in affected hips. Gd-enhanced MR imaging revealed synovial enhancement of affected hip joints, as follows: minimal enhancement in eight patients (40%), moderate enhancement in eight (40%), and strong enhancement in four (20%). No abnormal enhancement was demonstrated in bone marrow of the femur or adjacent soft tissue. The mean amount of joint effusion of affected hips was 2.7 ± 1.7 (range, 0.2-18.9) ml; statistically, this was much greater than that of contralateral hip ($p < 0.01$).

Conclusion : The MR findings of transient synovitis of the hip in children were normal bone marrow signal intensity of the femoral head, moderate or strong synovial enhancement, and asymmetric hip joint effusion.

Index words : Joints, MR
Femur, MR

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