

Legg - Calve - Perthes

1

. . . .

: Legg - Calve - Perthes(LCP)

: 1992 1999 LCP 80
 7 87 X -
 X - (frog leg view)
 : 87 43 (49%) , 13
 (15%) , 15 (17%) , 15 (17%)
 가
 , 30 9 (33%) , 가
 21 (68%) , 1.1 ± 0.3 cm 1.1 ± 0.4 cm
 가 , 7 (78%), 가 16 (76%)
 . Waldenström 9 7 (78%) , 가
 21 15 (71%) . Catterall
 9 7 (78%) , 가 21 19 (90%) grade
 IV .
 : LCP
 가
 , 가

Legg - Calve - Perthes(LCP)

, LCP LCP
 , (1, 2).
 LCP , CT LCP
 LCP
 . LCP
 가 ,
 1992 1999 LCP 80
 7 87
 (3 - 5). Carroll (6) 3 13 (7.4)
 Johnson (7) 65:15
 X - X -

(frog leg view)

1.5 Tesla Magnetom 63SP(Siemens, Erlangen,

Germany)
T1 (TR/TE=500/15 msec), T2
(TR/TE=1800/80 msec) . Gd-DTPA
kg 0.2 cc
T1 280-320 mm,
256×256, 0.3 mm, 3 mm
T1
, T2
(trabecula) 가 (Fig.
1), T1
T2 T1, T2

7 (78%), 가 16 (76%)
2 (22%), 가 5
(24%) 가
2 (22%), 가 16 (76%)
. Waldenström 9
7 (78%), 2 (22%)
가 21 5 (24%)
, 15 (71%), 1 (5%)
. Catterall 9
7 (78%) grade IV grade II grade III가
1 가 21 19
(90%) grade IV, grade II grade III가 1

T1
(Fig. 2),
가
가 (Fig. 3).
X- X-
(frog leg view) Waldenström Catterall
(8, 9). Waldenström
(incipient stage),
가 (avascu-
lar stage), 가
(fragmentation
stage), 가
(residual stage), Catterall
Grade I, 1/2
Grade II, 3/4 Grade III,
가 Grade IV 가

LCP
LCP
가
가
16
(4, 6, 7). LCP

87 43 (49%)
. 13 (15%)
15 (17%) , 15
30 9 (33%)
, 가 21 (68%)
가 1.1±0.3 cm
1.1±0.4 cm 가 (anterior),
(middle), (posterior)



Fig. 1. Bone marrow edema in a 7-year-old male with Legg-Calve-Perthes disease. Coronal T2-weighted image shows increased bone marrow signal intensity in metaphysis of left femur.



Fig. 2. Metaphyseal true cyst in a 7-year-old male with Legg-Calve-Perthes disease.

A. Hip AP view shows a 1.5 cm well marginated round radiolucent metaphyseal cyst in left femur.

B, C Coronal MR image shows that cyst is located in metaphysis without extension from physis and epiphysis. Metapypseal cyst shows round low signal intensity on coronal T1WI(**B**), homogenous high signal intensity on T2WI(**C**) and linear low signal intensity rim on both.

D. After gadolinium injection, metaphyseal cyst demonstrates rim enhancement. It suggests metaphyseal cyst containing fluid in cental portion.

가 (10). Hoffinger (4) 48% ,
52% , 가
(5) , Ponsetti
가
(12)
1/2 . Hoffinger (4)
가
가 T2 가
가 , LCP
Silverman (11) (12-
가 LCP 14). Carroll (6)
T1 , T2



Fig. 3. Metaphyseal false cyst in a 9-year-old male with Legg-Calve-Perthes disease.

A. Hip AP view shows a well margined round radiolucent metaphyseal cyst in right femur.

B, C. On coronal MR image, cyst is located in metaphysis communicated with physis and epiphysis. Metapyseal cyst reveals elongated, low signal intensity on T1WI(**B**), high SI on T2WI(**C**).

D. After gadolinium injection, metaphyseal cyst shows homogenous enhancement which suggests granulation tissue.

. LCP
가
(12, 15).
Johnson (7)
T1
가
,
,
,
T2
, (7/9)
Johnson
T2
가
(16/21)
Hoffinger
Ponsetti
가
가
1.1 cm
가
LCP
가
가
Waldenström
Carroll
가

MR Evaluation of "Metaphyseal" Change in Legg-Calve-Perthes Disease¹

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Purpose: To determine the metaphyseal changes occurring in Legg-Calve-Perthes(LCP) disease using MRI.

Materials and Methods: Between 1992 to 1999, 80 LCP patients (87 hips) underwent MR imaging and plain radiography. All MR images were reviewed, bone marrow signal intensity, the size and location of the metaphyseal cyst and its epiphyseal necrosis grade determined.

Results: Metaphyses were abnormal in 43hips (49%), while bone marrow edema was present in 28 (32%) and a metaphyseal cyst in 30 (34%). Metaphyseal cysts were classified as either 'true' (n=9) or 'false' (n=21) according to the enhancement pattern. The maximum diameters of true and false cysts were 1.1 ± 0.3 cm and 1.1 ± 0.4 cm, respectively. Their most common location was the anterior column; a true cyst occurred there in 7cases (78%), and false cyst in 16 (76%). Using the Waldenström classification, seven of the nine hips with a true cyst (78%), were found to be at the avascular stage and 15 of the 21 with a false cyst (71%) were at the fragmentation stage. Seven of these nine (78%) and 19 of these 21 (90%) were Catterall grade IV.

Conclusion: According to the findings of MR imaging, the metaphyseal changes occurring in LCP disease were bone marrow edema and metaphyseal cyst. This latter was visualized mainly in the anterior column and severely affected hip, and was classified as 'true' or 'false'.

Index words : Femur, necrosis
Children, skeletal system
Hip, MR

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