

Legg - Calve - Perthes

1

: Legg - Calve - Perthes(LCP)

Year	Study	n	Grade I (%)	Grade II (%)	Grade III (%)	Grade IV (%)
1992	Waldenström	87	15 (15%)	43 (49%)	15 (17%)	13 (15%)
1999	Carroll	87	30 (33%)	9 (10%)	16 (18%)	32 (37%)
1999	Johnson	80	7 (8%)	15 (17%)	7 (8%)	55 (68%)
1999	Catterall	80	21 (26%)	19 (23%)	19 (23%)	21 (26%)

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(frog leg view)

1.5 Tesla Magnetom 63SP(Siemens, Erlangen,

: Legg-Calve-Perthes

Germany)
 T1 (TR/TE=500/15 msec), T2
 (TR/TE=1800/80 msec) . Gd-DTPA
 kg 0.2 cc
 T1 280-320 mm,
 256 x 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).

LCP

LCP

가

가

X-

X-

(frog leg view)

Waldenström Catterall

(8, 9). Waldenström

(incipient stage),

16

(4, 6, 7).

LCP

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

87

43 (49%)

. 13 (15%)

15 (17%)

, 15

(17%)

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. Metaphyseal 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 central portion.

가 (10). Hoffinger (4) 48% ,
 52% , 가
 (5) 가 . Ponsetti
 (12)
 1/2 . Hoffinger (4)
 T2 가
 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. Metaphyseal 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 (16/21) 가
 가 (12, 15). Hoffinger Ponsetti 가
 Johnson (7) T1 가
 가 1.1 cm 가 LCP
 가
 T2 가 Waldenström 가
 (7/9) Carroll
 Johnson
 T2

가
 , 가 가
 가 가 가
 가 LCP
 (1, 16 - 19).
 Catterall
 grade IV 가
 grade IV 가
 (distortion) 가
 가
 가
 LCP
 가
 LCP 가
 가
 가

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2. . Legg-Calve-Perthes

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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