

Baseline evaluation of hospitalized patients with Legg-Calvé-Perthes disease

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SUMMARY

A retrospective study on 52 Legg-Calvé-Perthes disease patients was performed, with the objective of identifying the initial characteristics of the patients according to registration files data, such as: clinical status, radiographic classification and physical examination. The outcomes noted were as follows: 22 patients (42%) reported the presence of pain and limping, 21 patients (40%) reported only pain, 2 patients (4%) reported only limping, and 7 patients (14%) reported no pain or limping. During evaluation for range of motion, we found the numerical description for 16 (31%) patients, 28 (54%) patients the decrease in the range of motion was just described, but no numerical value assigned,

and in 8 patients (15%) such decrease – either with or without numerical value – was not reported. Regarding the radiological picture, we found that Catterall classification was used most of the times (64%), followed by Salter-Thompson (27%) and Herring (9%). We concluded that the baseline clinical status of these patients is similar to what is found in literature, with pain, limping, and decreased range of motion of the hip involved. Catterall's is the radiographic classification mostly used.

Keywords: Legg-Perthes disease; Range of motion; Radiography.

INTRODUCTION

Legg-Calvé-Perthes Disease (LCPD) was first described in 1910. However, to date, there is no single theory explaining the causes leading to the transient obstruction of the femoral head circulation^(1,2,3). Incidence varies according to the site, ranging from 1:1.200 to 1:12.500⁽⁴⁾, being higher among males than among females at a ratio of 4:1^(5,6).

The clinical picture is manifested by pain, limping, and decreased range of motion, with those symptoms being variable in intensity for each patient; pain can be reported on hips, but it is usually referred to the medium region of the thigh or knee. In LCPD there is a decrease of the abduction, flexion and hip inward rotation^(5,7).

Diagnosis is provided by the clinical status, and corroborated by a radiographic examination and/ or other complementary tests^(8,9).

Catterall⁽⁶⁾ classifies LCPD phases according to radiographic findings into four kinds, according to femoral epiphysis lesion extension. Mose⁽¹⁰⁾ reported the need to measure the femoral head lesion in LCPD with the purpose of obtaining a prognosis regarding hip osteoarthritis during patient's adult phase. Stulberg et al.⁽¹¹⁾ created a radiographic classification based on the results obtained after LCPD treatment. This classification divi-

des patients into four groups, according to the final outcome severity.

Salter and Thompson⁽¹²⁾ created a classification based on a radiographic sign of subchondral lysis (fracture), divided into two groups: A and B. Herring et al.⁽¹³⁾ described a classification based on the lateral pillar height of the epiphysis at the fragmentation phase, subdividing the hips into three groups: A, B and C.

In this study, we evaluated 52 patients with LCPD submitted to hospitalization in our medical service, within the period of January 1997 and July 2002, aiming to characterize the clinical status, radiographic classification and early goniometric evaluation of patients according to data described on patient's record files.

MATERIALS AND METHODS

Record files of 67 patients diagnosed with LCPD were analyzed. Those patients were hospitalized between January 1997 and July 2002 at the Orthopaedics and Traumatology Institute of the Hospital das Clínicas, Medical School of the University of São Paulo (IOT-HC/FMUSP). From those, 52 (78%) belonged to our study, because they presented with the disease at the active phase, with absence of associated hip lesion, neurological and/ or metabolic disorders, with 15 (22%) presenting LCPD at sequel phase; the latter group was excluded from the study.

Study conducted at the Orthopaedics and Traumatology Institute, Hospital das Clínicas, Medical School, University of São Paulo (IOT – HC/FMUSP).

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Record files were evaluated by using data according to patients' initial characteristics, such as: patient age at diagnosis, gender, involved side, pain, limping, radiographic test, degree of range of motion, and degree of muscular strength. Table 1 describes patients' initial treatment.

A descriptive statistical analysis was made regarding ordinal quantitative parameters of age, gender, involved side, pain, limping, radiographic classification, and goniometry, and showed as tables, comprising: average (A), standard deviation (SD), standard error (SE), maximum (MAX), minimum (MIIN) and number of patients (N), represented in charts. Data were compared to the available literature aiming to compare our patients' characteristics with those found in literature.

RESULTS

Patients' ages at the moment of diagnosis ranged from 4.3 years (52 months) to 13.3 years (160 months), with an average of 7.9 years (95.2 months).

In our series, 41 (79%) of patients were males and 11 (21%) were females.

The left hip was affected in 29 (56%) patients, and 22 (42%) had the right side involved. In 1 (2%) patient, the disease presented the bilateral form.

Regarding the clinical picture, 22 (42%) patients reported the presence of pain and limping, 21 (40%) presented only pain, 2 (4%) only limping, and 7 (14%) reported no pain or limping.

In the goniometric evaluation of hips, 28 (54%) patients had goniometric values of the range of motion tested (Table 2), in 16 (31%) a decrease in the range of motion was described without the respective values, and for 8 (15%), there was neither value nor description. The descriptive statistical analysis of hip goniometry is shown according to Table 3.

Regarding the early radiographic classification, mostly used in our service, according to data described on record files, was the Catterall's classification (64%), followed by Salter-Thompson's (27%) and Herring's (9%) (Figure 1).

DISCUSSION

Much has been discussed since the initial description of LCPD around the world. However, the etiology of the disorder still remains unclear. Some risk factors such as age, gender, and disease status at the moment it is first diagnosed are known to be directly important to the natural progression of the disease and its prognosis.

One of the first symptoms is pain and/ or limping. Pain can be reported on hips, but it is usually referred to the medium region of the thigh or to the knee⁽⁵⁾. In our study, 42%⁽²²⁾ of patients presented pain and limping, 40%⁽²¹⁾ only pain, 4%⁽²⁾ only limping, and 14%⁽⁷⁾ did not report any complaints on record files.

In LCPD, there is a decrease on abduction, flexion and inward rotation of hips⁽⁵⁾. In the goniometric evaluation, hip range of motion values have been measured in 54%(28) patients; the limitation of some hip overall movements was described in 31%(16) patients; and the goniometric evaluation was not performed in 15%(8) patients. We found initial goniometric values with averages similar to those described by Tsao et al.⁽⁷⁾, flexion being 102° against 119° for the authors; abduction 28° against 37°; and inward rotation from 15° to 14°, and outward rotation from 30° to 30°.

We believe that, at patients' early evaluation, the determination of the hip muscular strength must be mandatory. It may be suggested that this could make part of the initial protocol, if possible, by comparing the involved limb with the non-involved one.

Many studies criticize Catterall's classification because of its low reproducibility potential, presenting disagreement among observers^(14,15), and due to the possibility of changes according to the progressive phase of the disease^(15,16,17). Salter and Thompson's classification attempted to solve those problems since it is a simpler and more reproducible system, but it can only be used on the initial phases of the disease, when subchondral fracture is visible, being only applicable to a small number of patients^(18,19).

EARLY TREATMENT	# OF PATIENTS
Arthrodiastasis	19
Cutaneous traction + arthrodiastasis	7
Cutaneous traction + physical therapy at ward + arthrodiastasis	2
Varusing osteotomy	11
Valgusing osteotomy	3
Cutaneous traction	3
Cutaneous traction + physical therapy at ward	2
Physical therapy at ward	2
Follow-up	2
N	51*

* In 1 record file there was no early treatment description, so this was excluded from this analysis.

Table 1 - Data on early adopted treatment

Patient	Flexion	Abduction	Inward rotation	Outward rotation
4	140	-	45	30
8	120	35	5	35
9	90	15	0	45
10	100	20	0	20
12	90	10	30	10
13	110	50	10	40
15	110	50	20	45
16	90	40	40	40
17	90	15	20	20
19	-	-	0	25
20	90	30	30	40
21	100	20	30	10
22	90	10	10	10
23	120	40	25	40
24	120	40	15	40
25	120	45	20	45
26	-	-	0	30
30	-	-	15	45
34	100	25	15	30
37	130	45	0	30
38	90	10	0	30
39	95	30	10	30
41	115	45	20	35
42	100	20	0	30
43	110	30	30	35
46	100	-	20	20
47	90	20	20	-
48	50	0	0	0

Table 2 - Goniometric values of hip motion

	Flexion	Abduction	Inward rotation	Outward rotation
A	102,4	28,0	15,4	30
SD	18,0	14,6	13,1	12,2
SE	3,6	3,0	2,5	2,4
MAX	140	50	45	45
MIN	50	0	0	0
N	25	23	28	27

A - AVERAGE; SD - STANDARD DEVIATION; MAX - MAXIMUM; MIN - MINIMUM

Table 3 - Descriptive statistics of the hip range of motion (degrees)

In our medical service, we are experienced and confident in using the classification proposed by Catterall. Despite criticisms, this classification is useful for determining the kind of treatment to be used, either surgical or conservative.

The classification by Herring et al.⁽¹³⁾, has been widely and efficiently used on determining a prognosis^(15,20,21,22) and it is now being used for the first time in our service.

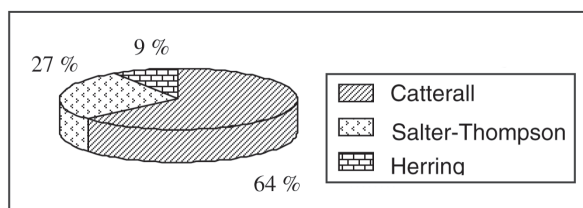


Figure 1 - Distribution of Frequency of Patients According to the Radiographic Classification Employed

CONCLUSIONS

Thus, we can conclude that LCPD has a well-defined clinical status, presenting: pain, limping and decreased range of motion, especially of flexion, abduction and inward rotation. We agree with the literature in regard of the radiographic classifications and we

understand that the use of only one of them will not be always enough, although the Catterall's classification has been mostly used in this study.

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