Prise en charge de la synovite transitoire de la hanche chez l'enfant

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PRISE EN CHARGE DE LA SYNOVITE TRANSITOIRE DE LA HANCHE CHEZ L'ENFANT

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Introduction

La synovite transitoire de la hanche ou rhume de hanche est une pathologie fréquente de l'enfance qui est caractérisée par une arthrite inflammatoire aiguë de courte durée et de résolution spontanée de la hanche. Cette condition a été rapportée pour la première fois par Lovett et Morse en 1892 et fût décrite comme une forme de maladie éphémère et de courte durée de la hanche qui présentait initialement les caractéristiques d'une maladie commune de la hanche mais dont les symptômes disparaissaient en quelques mois (*« a short-lived and ephemeral form of hip disease which presents at first the characteristics of common hip disease, but the symptoms of which disappear in a few months instead of continuing for years »*). Depuis, de nombreux auteurs ont essayé de mieux caractériser cette pathologie. Au fil des années, elle a été nommée différemment selon les hypothèses de l'époque de cette entité pathologique: *transient synovitis, acute transient epiphysitis, coxitis fugax, coxitis serosa seu simplex, phantom hip disease*, *toxic synovitis*, *observation hip*. Finalement, de toutes ces descriptions, on retiendra essentiellement la nature transitoire des symptômes, l'absence de lésions cartilagineuses ou osseuses à la radiographie, et la présence d'un épanchement intraarticulaire à l'échographie de la hanche.

Epidémiologie

La synovite transitoire de la hanche est la cause la plus fréquente de douleur aiguë de la hanche chez l'enfant. Elle touche les enfants âgés de 4 à 10 ans[1]. Son incidence annuelle a été estimée à 0.2% et l'incidence cumulée de la naissance à l'âge de 14 ans à 269.7 pour 10'000[2]. Un enfant a donc un risque cumulé d'avoir un rhume de hanche de 0 à 14 ans de 3% [2]. Le ratio garçon-fille est de 2.6:1 avec une prédominance masculine observée dans tous les

groupes d'âge.[2] L'incidence annuelle de récurrence a été estimé à 4% correspondant à un risque 20x supérieur à celui d'avoir un premier épisode.[2]

Etiologie

L'étiologie de la synovite transitoire demeure peu claire. Les liens avec la présence d'une atopie, les suites d'un traumatisme ou une infection virale ont tous été investigués[3-5]. Les causes allergiques ou traumatiques se sont révélées peu probables. Par contre, une origine virale semblerait contribuer à la survenue d'un rhume de hanche[6,7]. Par ailleurs, une étiologie génétique, comme la présence de HLA-B27, n'a jamais été investigué.

Présentation clinique

Le rhume de hanche se manifeste dans la plupart des cas par une boiterie aiguë observée le matin au réveil et associée à une douleur plus ou moins intense[1]. Cinquante pourcents des patients se présentent aux urgences 24 à 72h après le début des symptômes[1]. La synovite transitoire de la hanche est habituellement unilatérale mais peut toucher les deux hanches dans 5% des cas[8]. L'examen clinique se caractérise par une limitation douloureuse de la rotation interne et de l'abduction de la hanche. L'enfant peut se présenter avec la hanche en flexion, abduction et rotation externe, véritable position antalgique. La douleur est localisée au niveau du pli inguinal mais, dans 10 à 30% des patients, elle se situe au niveau de la face médiale de la cuisse et du genou[1]. Chez les enfants très jeunes, la seule manifestation clinique peut se limiter à des pleurs nocturnes[9]. La plupart des enfants présentant un rhume de hanche sont afébriles, mais la présence d'une infection virale concomitante peut entrainer un état fébrile qui sera dans ce contexte d'interprétation difficile[8].

Examens laboratoires et radiologiques

En raison de sa bénignité, le diagnostic d'un rhume de hanche peut être considéré comme un diagnostic d'exclusion, si bien que les examens complémentaires visent à exclure d'autres pathologies. Le diagnostic différentiel est très large (Table 1). L'arthrite septique doit être exclue en priorité car ses conséquences peuvent être dévastatrices en cas de retard diagnostic. Plusieurs critères dans la littérature ont été décrits pour différencier l'arthrite septique et le rhume de hanche. Taylor et Clarke ont rapporté 4 variables significatives : une douleur intense (11.5% en cas de rhume de hanche et 61.9% en cas d'arthrite septique), une douleur à la palpation (17.2% en cas de rhume de hanche et 85.7% en cas d'arthrite septique), une température au-dessus de 38° C (respectivement 7.9% et 81%) et une vitesse de sédimentation supérieure à 20 mm/h (10.9% versus 90.5%)[10]. En 1999, Kocher et al. ont défini 4 facteurs prédictifs indépendants, cliniques et biologiques, pour différencier arthrite septique et rhume de hanche : la présence d'un d'état fébrile (température orale supérieure à 38.5°), un refus de marche, une vitesse de sédimentation supérieure à 40 mm/h et un taux de globules blancs supérieur à 12 G/l[11,12]. La probabilité d'avoir une arthrite septique en cas de l'absence d'un de ces facteurs est de moins de 0.2%, elle est de 3% avec un facteur, 40% avec 2 facteurs, 93.1% avec 3 facteurs et 99.6% en présence des 4 facteurs. Successivement, Caird et al. y ont ajouté une 5ème variable : une protéine C-réactive supérieure à 20 mg/L[13]. L'utilisation de ces algorithmes doit cependant rester prudente. En effet, en appliquant l'algorithme proposé par Kocher, Luhmann et al. ont calculé une valeur prédictive d'arthrite septique de hanche de seulement 59% en présence des 4 critères[14]. D'autres affections graves peuvent se révéler par une arthrite réactionnelle de hanche, volontiers bilatérale : il s'agit des hémopathies malignes dont le diagnostic est suspecté par la formule sanguine complète. En résumé, dans le cas

d'une synovite transitoire de la hanche, les examens sanguins sont dans la plupart du temps dans la norme et la présence de valeurs anormale doit être confrontée à l'état clinique du patient en cherchant avant tout à exclure une arthrite septique[1,10].

La radiographie de hanche peut montrer des signes indirects d'épanchement intra-articulaire (Figure 1) mais elle est normale dans la plupart des synovites aigues transitoires [1]. Cet examen est cependant indispensable pour éliminer d'autres pathologies responsables de douleurs de hanche dont la maladie de Legg-Perthes-Calvé, l'épiphysiolyse de la tête fémorale, les tumeurs osseuses dont l'ostéome ostéoide.

L'ultrason de hanche a permis de faciliter le diagnostic de rhume de hanche grâce à sa grande sensibilité à détecter un épanchement liquidien (Figure 2)[15]. Cependant, ni la taille, ni l'échogénéicité du liquide ne permettent de préciser la nature du liquide qui peut être inflammatoire, septique ou encore hémorragique. [16]. En cas de doute et en présence d'une suspicion élevée d'arthrite septique, une ponction articulaire doit être effectuée[16]. Une arthrite septique est évoquée si l'analyse du liquide synovial révèle un liquide trouble ou franchement purulent avec une numération leucocytaire supérieure à 50'000 cellules/mm^3 ainsi qu'un résultat positif à la coloration de Gram[12,16]. Elle sera consécutivement confirmée par la culture du liquide synovial. Dans les cas de synovite transitoire de hanche, les valeurs de numération leucocytaire sont inférieures à 50'000 cellules/mm^3 et atteignent des valeurs moyennes rapportées à 7'000 cellules/mm^3 [16].

Le CT scan a été comparé à l'ultrason pour sa capacité à mettre en évidence un épanchement intraarticulaire par Egund et al[17]. Les deux techniques se sont révélées identiques. Cependant, le CT est un examen irradiant, il a un prix plus élevé et il est moins disponible que l'échographie. Celle-ci est ainsi devenue l'examen de choix pour rechercher un épanchement intrarticulaire en cas de synovite transitoire de la hanche[18].

En conclusion, le diagnostic de synovite transitoire de la hanche est retenu si l'ultrason de hanche montre un épanchement avec l'absence de lésions osseuses à la radiographie, après l'exclusion d'une arthrite septique éventuellement par une ponction de hanche en cas d'une présentation clinique évocatrice et de résultats laboratoires anormaux, et à condition que la symptomatologie régresse spontanément, en l'espace de quelques jours[19].

La prise en charge du rhume de hanche

Le traitement principal est le repos. Il est recommandé que celui-ci se fasse au lit jusqu'à la disparition des symptômes[2,20]. Certaines études ont proposé d'installer une traction au niveau des membres inférieurs (Figure 3) et c'est d'ailleurs cette méthode qui était employée dans notre institution[2]. Ce type de traitement est pourtant sujet à controverses. En effet, il a été décrit que la pression intracapsulaire de la hanche est augmentée par la position de la hanche en extension et en présence d'un épanchement intraarticulaire[21,22]. Par conséquent, l'augmentation de cette pression, mesurée largement au-dessus de la pression vasculaire capillaire, peut mettre en péril la vascularisation de l'épiphyse fémorale[22]. Théoriquement, cela pourrait être un facteur de risque au développement d'une nécrose de la tête fémorale[20,22]. Cependant, le lien de cause à effet n'a ni été démontré dans les études utilisant la traction collée ni dans nos observations[2].

Le traitement par mise en repos de la hanche peut être associé à un traitement anti-inflammatoire qui permet de diminuer la durée des symptômes de manière significative en comparaison à l'utilisation d'un placébo[23].

Introduction à l'étude

Durant la période d'observation de cette étude, lorsqu'un enfant se présentait aux urgences avec une douleur de hanche ou une boiterie aiguë sans traumatisme et que le bilan initial ne

mettait pas en évidence de diagnostic précis, il était hospitalisé au sein du service d'orthopédie pédiatrique. Le bilan de base était complété par un bilan appelé «bilan hanche irritable» (Figure 4). Celui-ci comportait une échographie de hanche, si celle-ci n'avait pas été faite initialement, un bilan rhumatologique et une sérologie à la recherche de la Borréliose. Durant son hospitalisation, l'enfant était traité par mise en traction des membres inférieurs afin de diminuer la symptomatologie douloureuse et de mettre la hanche au repos. Un traitement d'AINS et d'antalgique était également instauré. Dès la disparition des symptômes, l'enfant pouvait rentrer à domicile. Tous les enfants qui avaient été hospitalisés avec une suspicion de rhume de hanche étaient ensuite revus en consultation, six semaines après leur retour à domicile. Lors de cette consultation, un examen clinique était effectué à la recherche de douleurs ou d'une limitation fonctionnelle et une nouvelle radiographie était réalisée afin d'exclure une maladie de Legg-Perthes-Calvé. Si ce contrôle était négatif, la prise en charge du patient se terminait et le diagnostic de rhume de hanche était retenu.

Ce bilan «hanche irritable» avait pour but d'exclure précocement le plus grand nombre de pathologies pouvant provoquer une douleur de hanche ou une boiterie chez l'enfant. Ainsi, les douleurs de hanche sans diagnostic précis étaient considérées comme étant des « rhumes de hanche », suivant certaines propositions de la littérature qui associent dans ce groupe les synovites aigues transitoires et les hanches dites « irritables ». Dans notre étude, nous nous sommes posés la question de savoir si un tel bilan était réellement nécessaire. Nous avons cherché à définir la pertinence de certains examens faits en routine et d'estimer en quoi leurs résultats ont pu aider au diagnostic et à la prise en charge des enfants souffrant d'un rhume de hanche. Nous avons également voulu savoir si l'hospitalisation obligatoire et le contrôle radiographique systématique à 6 semaines étaient indispensables. Finalement, nous avons voulu proposer une stratégie de prise en charge d'un enfant se présentant avec une boiterie

aiguë ou une douleur de hanche d'origine non traumatique en se basant sur l'analyse de nos résultats.

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Transient synovitis of the hip: which investigations are truly useful?

Children presenting with acute non-traumatic hip pathology can display a wide variety of non-specific symptoms, such as a limp or abnormal gait, pain, refusal to bear weight or decreased movement of the involved limb. These complaints represent a diagnostic problem for the paediatrician and emergency's physicians, not only because of the broadness of these complaints but also because the differential diagnosis varies from quite harmless conditions such as transient synovitis of the hip to more severe problems such as Legg-Calvé-Perthes' disease (LCP), slipped capital femoral epiphysis (SCFE) and life-threatening conditions such as septic arthritis of the hip[1]. The most common cause of hip pain and limp in 4 to 10 year-old children is transient synovitis of the hip (TSH)[1,2]. Complaints may include anterior groin pain, thigh pain or knee pain, limping or refusal to bear weight[3-6]. Symptom resolution without any specific treatment in a matter of days is an essential feature of diagnosis[2,3]. However, the symptoms of TSH are non-specific and may be present in many other potentially serious hip conditions[6,7]. Because of the potential risk of missing a serious condition in this situation, acute non-traumatic limping children are often promptly referred and over-investigated[8,9]. A few studies have aimed to establish which parameters are most relevant in clinical decision-making for acute non-traumatic hip pathology, in order to make the correct diagnosis[10,11]. In our institution, a strict investigation's protocol for children presenting with an acutely irritable hip in the emergency room was applied systematically between 1999 and 2007 (Figure 1). In the case where no evident diagnosis is made on initial management, it is not clear whether further investigations, such as rheumatologic panel, to exclude all other possible diagnoses are necessary. The primary aim of this study was to assess whether the investigation's model used at our hospital could exclude all hip pathologies, in the case of inconclusive initial work-up at the emergency room. Secondly, it was intended to assess which investigations were truly

necessary in this setting. Finally, we wanted to elaborate a comprehensive and adapted protocol for the management of a child presenting an acutely irritable hip.

METHODS

In this study, we retrospectively reviewed the medical records of all children under the age of 16 years who were managed according to a specific protocol for acute non traumatic hip pain applied in our institution between January 1999 and April 2007. The protocol included an antero-posterior (AP) and Lauenstein hip views, a hip ultrasonography, white blood cells count (WBC), measures of C-reactive protein level (CRP) and erythrocyte sedimentation rate (ESR), a rheumatoid panel testing including antinuclear antibodies (ANA), rheumatoid factor (RF), Antistreptolysin O (ASO) titers and Lyme's serology. All children were admitted to our pediatric orthopedic ward. Inclusion criteria to the protocol were children under 16 years, presentation at the emergency department with an acute, new-onset, non-traumatic limp, hip pain or refusal to bear weight; absence of bony lesion on hip radiography; and blood sample results inconclusive for a definite diagnosis in emergency room. Exclusion criteria included cases where a definite diagnosis was clearly found during initial management in the emergency room.

Children included in the protocol were prescribed complete avoidance of weight bearing and lower-limb non-adhesive skin traction. Nonsteroidal anti-inflammatory and myorelaxing drugs were used for pain-relief and improve children’s comfort. Once symptom-free, supervised ambulation was resumed and patients were allowed to leave the ward. Children were systematically reevaluated six weeks after hospital discharge with a clinical check-up and radiological (AP and Lauenstein) views.

The study has received institutional review board approval (*Mat-Ped 07-009R*) and was conducted in accordance with Good Clinical Practice guidelines and the Declaration of Helsinki.

Diagnosis definition

Patients were diagnosed with TSH if an ultrasound-confirmed hip effusion, complete resolution of symptoms occurred without any specific treatment, and no other pathology of the hip was identified during follow-up.

In case of negative hip ultrasonography for hip effusion, together with spontaneous resolution of symptoms during follow-up and no other identified pathology of the hip, the diagnosis of irritable hip of unknown origin was given.

Data collection

Data collected included patient age, gender, duration of symptoms prior to admission, results of clinical, radiologic and laboratory findings, results of clinical and radiological follow-up 6 weeks after hospital discharge, and nature of definitive diagnosis. Weight-bearing status was determined from the clinical examination, and delay between limp onset and presentation was defined in days. Fever was defined as an oral temperature >38.5° Celsius (C). The values of ANA, ASO and RF were interpreted according to our laboratory references, i.e. superior to 6U for RF, 1:80 for ANA, and above 200 U/ml for ASO. At ultrasonography, the presence and amount of articular effusion was reported in millimeters (mm) of space between the femoral neck and the joint capsule.

Statistical analysis:

Descriptive statistics were used to present our demographic data. Unpaired Student's test was performed to compare subgroups of patients on laboratory data for values of CRP, WCC, ESR, and ASO titer. Statistical analysis was performed using SPSS (Version 16.0; SPSS Inc., Chicago, Illinois). Differences were considered significant at $p<0.05$.

RESULTS

Between January 1999 and April 2007, 440 patients were admitted at our pediatric orthopedic ward with chief complaint of non-traumatic hip pain or a limp. Among these patients, 74 were

given a definite diagnosis based on clinical, laboratory and radiological work-up at time of presentation at the emergency room. There were 2 septic arthritis, 46 Perthes' diseases, 2 juvenile arthritis, 20 slipped capital femoral heads, 1 Kawasaki's disease, 1 myositis ossificans, 1 fibrous dysplasia of proximal femur and 1 blood effusion of the hip due to hemophilia. The remaining 366 patients with non-diagnostic initial work-ups underwent the specific protocol as described in the method section and fulfilled the inclusion criteria for this study. Among these patients, 51 (14%) had another episode of hip pain requiring re-admission to the hospital during the study period. In total, 417 hospitalization episodes for hip pain without a clear diagnosis at the emergency room were collected. Among this group, the diagnosis of TSH was subsequently confirmed in 383 (91.8%) cases. After admission on the ward, one patient presented clinical and biological parameters (CRP of 51 mg/l and WCC of 24000) compatible with septic arthritis, and was treated accordingly despite negative hip joint aspiration. One patient had Lyme arthritis diagnosed on positive Lyme's serology, and the remaining 32 patients had a hip pain or limp of unknown origin with an negative ultrasound for hip effusion (Table 1). Among these 32 cases of irritable hips, full recovery was observed at follow-up. Demographic data of patients who underwent the specific protocol are shown in Table 1.

Clinical evaluation:

Among the 383 patients with transient synovitis of the hip, 192 (51%) had symptoms for less than 24h prior to admission. When symptoms were present for more than 24h, mean symptom duration was 2.1 days (range 1-21 days) before medical advice was sought. Among all patients (417) who underwent the specific "irritable hip protocol", limping was present in 392 cases (94%); among these children, 69 (16.5%) were absolutely unable to bear weight. In 23 (5%) cases, no information was found concerning the weight-bearing status. Only 5 (1.2%) patients presented an oral temperature greater than 38.5°C at initial presentation.

One hundred and seventy (40%) patients had an upper respiratory infection within 2 weeks preceding symptom onset.

Laboratory findings:

WBC count superior to >12x10^3/mm^3 was present in 47 (11.3) children. Seventy-two patients had a CRP superior to 10 mg/dl with a median value of 15 mg/dl +/- 21.9 (5 to 86). CRP was inferior to 10 mg/dl in 345 patients (83%). ESR was superior to 40 mm/h in 8 (2.4%) patients (Table 2). ASO titers were tested in 403 patients and were above 200 U/ml in 87 (22%) cases. When abnormal, median value was 400 U/ml, ranging from 300 U/ml to 800 U/ml (Table 2). Lyme's serology testing was performed in 323 patients and results were normal for all patients except for one.

Rheumatologic panel:

ANA titers were assessed in 402 patients and were negative in 341 cases (86%). Among the positive results, ANA were superior to 1:80 in 25 cases (6%). Rheumatoid factor (RF) was tested in 388 patients and was positive in 60 (15%) cases; FR was above 6UI in 60 (15%) patients (Table 3). Among children with abnormal rheumatologic panel, 38 underwent ophthalmologic examination in order to rule out uveitis, and all were normal. Among children with positive rheumatologic titers, none fulfilled the diagnostic criteria for Juvenile Idiopathic Arthritis (JIA).

Radiological investigations:

Indirect signs of effusion were seen in 82 (19.6%) children on the standard pelvic radiographs, while no osseous abnormalities were noted. A hip ultrasound and were performed in all patients. Hip effusion was observed in 385 (92.3%) cases with a mean value of 6.7 mm (range 2-19 mm).

Clinical and radiological follow-up:

Four hundred and two patients (96.4%) were seen for a clinical and radiological follow-up 6 weeks after hospital discharge and 15 were lost. Three hundred and ninety six children were perfectly asymptomatic and had a normal hip X-ray. One patient had persistent pain despite normal radiological aspect of the hip at 6 weeks follow-up. He required further follow-up and hip X-rays at 12 weeks showed early signs of LCP disease.

Five patients had an asymmetrical aspect of the femoral head on hip X-rays and required additional follow-up despite entire resolution of clinical symptoms. Eventually, all these patients had a complete and spontaneous resolution of radiographic anomalies.

DISCUSSION

The diagnosis of TSH in children with acute non-traumatic hip pain or limp is often challenging. Clinical manifestations of TSH may be suggestive of other more serious hip disorders, such as septic arthritis, LCP or acute SCFE, and must be ruled out[11]. In order to overcome the possibility of leaving a potentially serious condition undiagnosed after initial work-up at the emergency room, a strict policy of running systematic clinical, radiological and laboratory work-up has been established in our institution. Moreover, all patients were seen 6 weeks after hospital discharge for clinical and radiological follow-up. Results of the current study show that children presenting with acute, non-traumatic hip pain or limp at the ER without a clear diagnosis at time of presentation were subsequently found to have TSH in almost in the majority of cases (92%) at the end of diagnostic work-up. These results confirm that most children complaining of a limp will turn out to have TSH, which may be adequately managed without any specific therapeutic measures and patients can usually be followed on an outpatient basis[8,9]. In addition, among the patients included in our study, conditions such as septic arthritis, SCFE, or LCP disease, were not diagnosed after the specific investigation work-up. This could be due to the fact that these diagnoses have been made upon initial presentation at the emergency room based on routine investigations.

Serum inflammatory parameters may be slightly raised in TSH[3]. As a recent viral infection (most commonly an upper respiratory tract infection) has been postulated as a precipitating factor[12], ESR, and CRP values may be discretely elevated. However, raised inflammatory markers are paramount predictors of septic arthritis of the hip[10,11]. Kocher and al. compared data in children with septic arthritis and TSH, and concluded that there were 4 predictive factors for septic arthritis of the hip: a history of fever (oral temperature superior to 38.5°C), a non weight-bearing status, ESR > 40 mm/hr, and a WBC count > 12.000[11,13]. Caird and al. added CRP level of >20mg/L to these 4 factors[10]. Among children submitted to our screening protocol, 70% had 0 predictor, 24% 1 predictor, 19% 2 predictors, 1% 3 predictors, and none had 4 or 5 predictors (Table 4). The only patient who was considered with septic arthritis was found to have only 2 predictive factors according to Kocher and 3 factors according to Caird corresponding to a probability of septic arthritis of 40% and 82.6% respectively[10,11]. These algorithms should be used with caution especially in children under 4 years, since it has been shown that children between 6 and 48 months are susceptible to develop *Kingella kingae* osteoarticular infection despite normal laboratory values[14,15].

Consistently with current literature, our results show that radiographs of the hip are often unremarkable in patients with TSH and may only show indirect signs of effusion[16,17]. The main reason for radiographic evaluation is to rule out osseous lesions such as LCP disease, acute or chronic SCFE, or bone tumors and should be obtained early in diagnostic workup. Nevertheless, it is important to note that these hip disorders do not present with similar history and clinical findings as does TSH. Children with TSH have a complete resolution of symptoms in a week or less, even if residual symptoms may occasionally persist 7 to 10 days after the initial presentation.[2,18] When compared to patients with TSH, patients with Perthes disease have a considerably longer duration of hip pain[4]. Analogously, children with chronic SCFE usually present with a history of limping for several weeks and poorly localized pain to

the hip, groin, thigh, or knee. Moreover, these children are often older than the peak age of TSH that is between 4 and 8 years. Also, during clinical evaluation, children with Perthes's disease or SCFE generally show some degree of amyotrophy of the ipsilateral quadriceps muscle, which is not present to children with transient synovitis[19,20]. This clinical feature may be helpful in assessing the need for X-rays in the acute setting. This parameter however has not been assessed in this study.

In the present study, a hip ultrasound was performed in all children presenting with suspicion of TSH. A hip effusion was present in 92% of cases. All negative ultrasound cases were treated as TSH and had a 6 weeks follow-up. All had complete resolution of symptoms and no diagnostic entity could explain their initial clinical presentation. Ultrasound of the hip may help confirm or exclude hip effusion in children with suspicion of transient synovitis or septic arthritis[16,21,22]. However caution must be taken not to misinterpret false-negative studies when performed too early in the course of septic arthritis[23]. Moreover, ultrasound is not discriminative in differentiating SA and TSH and should not be considered a safe diagnostic tool to confirm or exclude hip SA in children[24,25]. In fact, ultrasound served mainly to confirm the localization of symptoms to the hip and to detect the presence of effusion.

In our series, ASO titer was superior to normal values in 22% of children (Table 3), but we did not encounter any cases of post-streptococcal reactive arthritis (PRSA). This rate is a little more elevated than the ASO titer of 11% noted in a previous study by Bickerstaff and al[9]. The incidence of acute rheumatic fever (ARF) in the United States and Western Europe has dramatically decreased and PSRA is currently more prevalent[26]. PSRA is a distinct clinical entity and differs from the typical arthritis associated with rheumatic fever[27]. Patients suffering from PRSA usually have ongoing arthritis 6 weeks after symptom onset[28] and may require more than 50 days to resolve[29]. Thus, the clinical course of PRSA is characteristic and radically different from that of TSH. Finally, all clinical findings of PRSA usually subside

before the ASO titers reach their peak value. We conclude that streptococcal antibody tests should be performed only in patients who sustained a documented β-hemolytic group A streptococcal throat infection or when the children have an unusual longer history of hip pain compatible with PRSA.

Lyme's disease was screened among all patients in our study. Only one patient had a positive serology and was successfully treated with antibiotic therapy. Lyme arthritis in children is characterized by brief, often recurrent attacks of oligoarthritis [30,31]. Of all joints, the knee is the most commonly involved [30,31]. Lyme arthritis of the hip has been rarely reported [31,32]. Unlike transient synovitis of the hip, isolated hip involvement is very unusual in Lyme arthitis, further helping the distinction between these two entities[32]. Systematic serologic screening for Lyme disease is certainly not recommended in children presenting an acute atraumatic hip pain. However, Lyme's arthritis should be considered in the differential diagnosis of transient synovitis of the hip in children residing in areas in wich Lyme disease exists.

Another goal of the screening protocol performed in our institution was to exclude a rheumatologic disorder such as juvenile idiopathic arthritis (JIA). In order to achieve this, ANA and rheumatoid factor (RF) was assessed. Among patients with positive rheumatologic tests, no child was diagnosed with JIA according to the ILAR criteria[33] as none were symptomatic at 6 weeks follow-up. In our study, patients had positive ANA and RF in 8.3% and 14%, respectively. These values are comparable to those observed in a normal population[34]. In fact, none of these parameters are specific to JIA and are present in only 30-50% of patients with JIA[35-37]. Retrospectively, measurement of ANA and rheumatoid factor seems questionable in case of acute hip pain. However, to our knowledge, this has never been assessed and the results presented here support this affirmation. We suggest that these

parameters should not be tested routinely in case of acute hip pain or limp but should only be performed 6 weeks after articular pain onset in presence of criteria for JIA.

Finally, all children admitted for suspicion of TSH in our hospital were seen 6 weeks after hospital discharge for clinical and radiological follow-up. As described previously, all children but one presented a complete remission of symptoms. The latter presented recurrence of intermittent pain to the groin and was diagnosed with LCP disease, and follow-up was prolonged accordingly. During follow-up, asymmetrical aspect of the femoral head was found in 5 asymptomatic patients. These radiographic findings had resolved during subsequent controls. In all remaining patients, complete resolution of symptoms occurred and all standard radiographs were normal. These results suggest that the use of radiographs during follow-up should only be considered in case of recurrent or persistence of pain or limp and should not be performed routinely.

The design of our study is comparable to previous studies and led to the same conclusion that most children with acute non traumatic hip pain or limb may be managed as outpatient and specific investigations should not be done in routine [8,38]. However, most of these studies lack description of follow-up and did not report results on rheumatologic investigations and Borrelia serology.

CONCLUSIONS

This study confirms that a vast majority of children with acute hip pain or limp suffer from TSH, a benign and self-limiting condition. Retrospectively, the majority of children treated in our study did not show necessity for hospital admission. As supported by the literature, children with suspicion of TSH may therefore be treated on an outpatient basis provided that severe hip disorders, such as septic arthritis of the hip or acute SCFE, have been ruled out[8,38]. Specific investigations are probably not fundamental, especially if symptoms have been present for less than a few days. The consequences of such common practice may lead to

unnecessary costs as well as patient and parental distress. Thus, initial investigations should, in our opinion, include serum WBC count, CRP and ESR, and X-rays imaging of the hip (Fig 2). In the absence of a definite diagnosis, we suggest a hip ultrasonography should be performed. In the presence of hip effusion without suspicion of septic arthritis, patients could be considered as having a probable transient synovitis of the hip. In the absence or hip effusion, children may be considered as having a so-called irritable hip. However, other diagnosis, such as osteomyelitis should be kept in mind and excluded in case of persistence of symptoms. In both situations, children may be treated on an outpatient basis and parents informed to urgently consult in case of any change in symptomatology, onset of fever, or persistence of pain. Children should be referred to their pediatrician or pediatric orthopedist for a checkup 6 weeks after initial workup to confirm the resolution of symptoms. Also, radiographic views are unnecessary during follow-up for TSH in the asymptomatic child. Finally, screening for rheumatologic diseases, acute rheumatic fever, post-streptococcal reactive arthritis, or Lyme disease is not justified at time of presentation at the emergency room.

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Transient synovitis of the hip: which investigations are truly useful?

Tables and figures

Figure 1

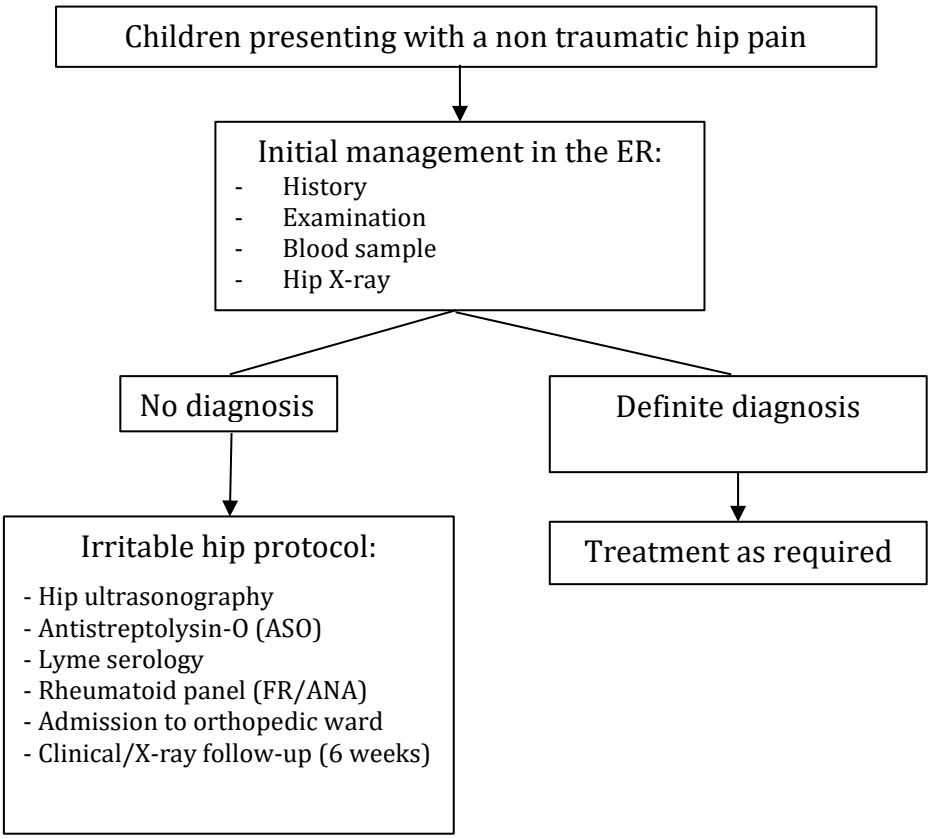

Figure 1. Management protocol of acute non traumatic hip pain applied in our institution between 1999 and 2007.
ASO, Antistreptolysin O; CRP: C-reactive protein; ER: emergency room; ESR: erythrocyte sedimentation rate; TSH: Transient synovitis of the hip; WBC: white blood cell

Figure 2

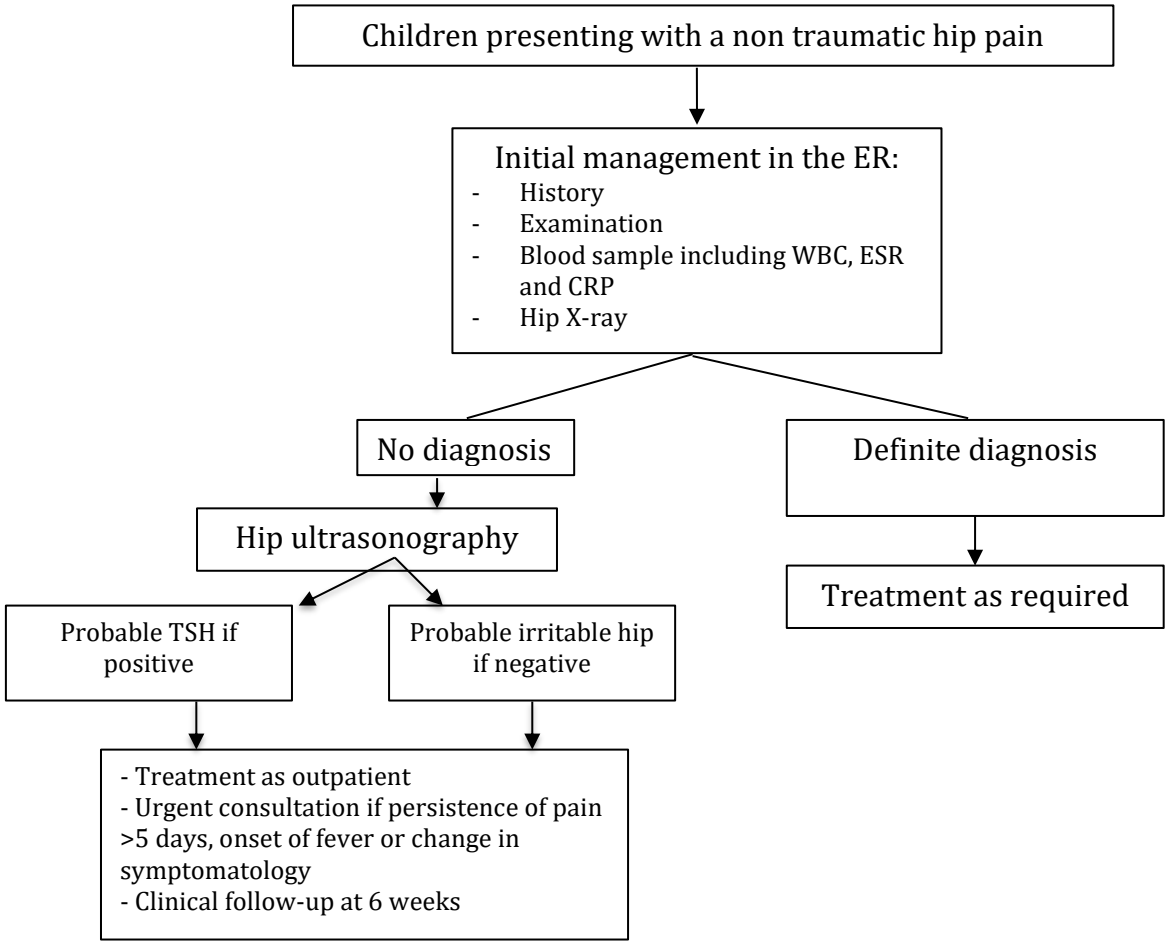

Figure 2. Management protocol of non traumatic hip pain
ER: emergency room; WBC: white blood cell; ESR: erythrocyte sedimentation rate; CRP: C-reactive protein; TSH: Transient synovitis of the hip

Table 1. Patients demographic data parameters (417 cases)

Males / Females	289/128
Age in years (range)	5.6 (1 to 13)
Diagnosis	
Transient synovitis (%)	383 (91.8)
Septic arthritis (%)	1 (0.2)
Lyme arthritis (%)	1 (0.2)
Irritable hip of unknown origin	32 (7.7)

Table 2. Laboratory results

	Total*	**Transient synovitis of the hip**	**Irritable hip with unknown origin**	**P value**
CRP (mg/dl)	n=415	n=383	n=32	
< 10mg/dl (%)	345 (83)	319 (83)	26 (81)	
10-20 mg/dl (%)	47 (11)	45 (11.7)	2 (6)	P=0.3
> 20 mg/dl (%)	23 (6)	19 (5)	4 (12.5)	
Range	5-86	5-86	5-61	
WCC	n=415	n=383	n=32	
>12.0 x 109 cells/l (%)	47 (11)	44 (11.5)	3 (9.4)	P=0.73
Range	3.4-22.1	3.4-17	4.3-22.1	
ESR	n=316	n=296	n=20	
< 5 mm/hr (%)	24 (7.5)	22 (7.5)	2 (10)	
5-40 mm/hr (%)	285 (90)	267 (90)	18 (90)	P=0.17
>40 mm/hr (%)	7 (2.5)	7 (2.3)	0	
Range	2-61	2-61	2-24	
ASO Titer	n=401	n=371	n=30	
<200 U/ml (%)	316 (78)	293 (79)	23 (67)	
>200 U/ml (%)	85 (22)	78 (21)	7 (23)	P=0.61
Range	0-800	0-800	0-400	

CRP, C-reactive protein; WCC, white cell count; ESR, erythrocyte sedimentation rate; ASO, Antistreptolysin O;

*The two patients diagnosed with septic arthritis and Lyme's disease were excluded from data analysis.

Table 3. Rheumatologic panel results

	Total	**Transient synovitis of the hip**	**Irritable hip with unknown origin**
ANA titer	n=401	n=371	n=30
Negative (%)	342 (86)	316	26
>1:80 (%)	59 (14)	55	4
Median (SD)	160 (387)	160 (400)	120 (113)
RF	n=387	n=359	n=28
<6UI (%)	327 (85)	303 (84)	24 (86)
>6UI (%)	60 (15)	56 (16)	4 (14)

ANA, antinuclear antibodies; RF, Rheumatoid factor;

*The two patients diagnosed with septic arthritis and Lyme's disease were excluded from data analysis.