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Case report

A study of x-ray, haematological investigation, ultrasound and culture sensitivity in the management of septic arthritis in children and their correlation with per operative findings:

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ABSTRACT

Septic arthritis at any age is a clinical emergency and more so in new born and infancy.A delay in diagnosis and treatment of septic arthritis can result in complication and significant morbidity including complete destruction of the articular cartilage and underlying epiphysis,loss of adjascent growth plate and dislocation of joint.Hence understanding the importance of clinical evaluation and diagnostic aids such as ultrasonography,blood investigation,and roentgenography is vital in efficient management of this condition.

1. Introduction

Septic arthritis at any age is a clinical emergency and more so in new born and infancy.A delay in diagnosis and treatment of septic arthritis can result in complication and significant morbidity including complete destruction of the articular cartilage and underlying epiphysis,loss of adjascent growth plate and dislocation of joint.Hence understanding the importance of clinical evaluation and diagnostic aids such as ultrasonography,blood investigation,and roentgenography is vital in efficient management of this condition.

PATHOGENESIS:

- Modes of spread:direct inoculation,haematogenous spread and spread from adjascent osteomyelitis
- Before two years of age,metaphysic is continuous with epiphysis and there is free vascular anastomosis between them
- Increasing area of metaphysic is intra articular with growth
- Two stage destruction: first cartilage matrix second collagen
- In 48 hrs 20% of glycosamineoglycan is distroid

2. Case

A 30 year old male patient presented to us with complaints of pain over back of knee and calf region since 12 months. Pain aggravated with exertion, walking and relieved on flexing the knee. He gives history of blunt injury to his upper calf 1 year ago. 6 months ago, he was started symptomatic treatment with analgesics for which he responded and was able to manage his daily activities. As the pain worsened and was not responding to analgesics, patient turned up for follow up. On examination, there was no palpable swelling even on resisted flexion of knee. He has superficial point tenderness over his lower popliteal region.

Common Causitive Organisms According To Different Age Group:

Age	Common causative organism
Neonate	Staphylococcus aureus Gram negative organisms
Infant	Staphylococcus aureus Himophiillus influenza
Child	Staphylococcus aureus
Adolescent	Staphylococcus aureus

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CLINICAL FEATURES:
NEONATAL AND INFANTS;

- Failure to thrive
- Fever or no fever
- Movements of joint restricted
- Peudoparalysis
- Child cries with passive movement
- Swelling may be or may not be seen

CHILDREN

- Refuse to walk
- Refered pain in knee
- Fever may be present
- Pseudoparalysis
- Contractures in joint
- Swelling may be seen

Moreey's Criteria For Septic Arthritis : When Culture Is Negative

- Temp is > 38.30 degree centigrade
- Swelling of suspected joint seen
- Pain exaggerated on movement of joint
- Systemic symptoms present
- Satisfactory response to antibiotics

CLINICAL ASSESMENT
I
I
INVESTIGATION : CBC , ESR ,CRP X-RAY , USG , BLOOD C/S
I
I
ASPIRATION OF THE JOINT AND C/S
I
I
ARTHROTOMY OF THE JOINT UNDER GENERAL ANAESTHESIA

POST-OPERATIVE EVALUATION:

- CLINICAL RESPONSE: Subcidence of fever improvement in movements,reduction in dischargefrom drain,wound healing and decrease in swelling

- FOLLOW UP EVALUATIOJN:Examination of range of movement joint stability, limb lengthdiscripancy and presence of crepitus on movement.

- USG: Can be used as a tool for followup evaluation to verify residual infection,erosion of epiphysis,joint sub-lxation and presence of osteomyelitis in adjacent bone.

3. MATERIAL AND METHODS :

- A total 20 Cases were included in the study,who were treated at mamata general hospital, for septic arthritis in age group 0 – 12 years of age .

- In which 07 patients were less than 1 month of age ,05 patients were 1month to 1 year of age , and 08 were 1 year to 12 years of age. 10 septic arthritis of hip joint,08 were septic arthritis of knee , 01 were ankle,01 were shoulder

- All the patients were evaluated by through clinical examination,blood investigation,

- (CBC,ESR,& CRP),Ultrasonography and X-ray of the joint concerned

- A joint aspiration is done for confirmation of presence of purulent material in the joint.

- In all cases arthrotomy was done under general anaesthesia at the earliest,aspirated material was sent for culture and sensitivity.

- An empherical broad spectrum antibiotic therapy is followed and later changed according to clinical response and sensitivity pattern obtained.

- All patients were evaluated at regular interval upto a minimum of two months

- Follow up clinical examination as well ultrasonography,and X-ray were used to evaluate the patient.

4.RESULTS OF THE STUDY IN TABULATIO
AGE DISTRIBUTION

Age /sex	Number
Upto 1 month 3 male / 4 female	7
1month to 1 year 2 male / 3 female	5
More than 1 year 3 male / 5 female	8
TOTAL	20

JOINT INVOLVEMENT:

Diagnosis	Number
Hip	10
Knee	08
Ankle	01
Shoulder	01
Total	20

DURATION OF SYMPTOMS AT PRESENTATION

Duration	Number
Up to 1 week	7
1 wk to to 2 wks	5
2wk to 3 wks	4
3wk to 4 wks	2
More than 4 wks	2

CLINICAL FINDINGS:

Clinical findings	Number
Pseudoparalysis	20
Pain full ROM	20
Deformity	20
Local rise of temprature	20
Swelling	20
Generalised pyrexia	20

X –RAY FINDING:

X –ray finding	Number
Joint effusion	14
Erosion of epiphysis	01
No radiological abnormality	05

ULTRASONOGRAPHY FINDINGS

USG Findings	Number
Effusion	17
Echodensity	02
Epiphysial erosion	01

ANALYSIS OF PER-OPERATIVE FINDINGS:

Per-operative finding	Number
A.Effusion	20
Thick purulent	17
Seropurulant	02
Serous	01
Synovial thickening	18
Epyphysial erosion	01

CULTURE REPORT:

Culture	Number
No growth	12
Staphylococcus Aureus	05
Streptococci	01
Klebseilla	01
pseudomonas	01

INVESTIGATION:

Investigation	Number
Total counts	
More than 10000	06
10000-12000	03
12000-14000	02
More than 14000	09
Polymorphs,more than 75%	08
ESR More than 45 mm/1hr	18
CRP +VE	20

ANTIBIOTICS MANAGEMENT

Antibiotic protocol	Number
When culture negative	
Changed	04
Same continued	08
When culture positive-	
Changed	05
Same continued	03

· Change in Antibiotic is guided according to the clinical response and sensitivity report.

· Clinical response is judged by reduction in fever,improved movement in limb,stoppage of discharge from drain site , healing of surgical wound.

· Commonly used is third generation antibiotic cephalosporin and genta mycin or amikacin.

5. CONCLUSION :

1. Through ultra sound is key diagnostic aid in the evaluation of septic arthritis,in a significant number of cases it may not suggest septic arthritis.
2. When ultra sound is negative supportive evidence of other diagnostic aids are necessary to confirm the diagnosis
3. Aspiration should be done prior to arthrotomy in all cases to confirm diagnosis,and to evaluate when ultrasound is negative
4. Culture and sensitivity of the joint aspirate and clinical response to antibiotic therapy are the keys for decision to administer appropriate antibiotic therapy.
5. Total count ,differential count and x-ray do not play a significant role in the diagnosis of septic arthritis
6. Ultra sound can be used as an excellent tool for follow up evaluation in septic arthritis.

6. REFERENCE

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