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Bacterial septic arthritis in adults

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背景

- Diagnosis of S.A be challenging even for doctors skilled in management of musculoskeletal disease
- Patients usually present in primary care or ED where doctors had little training in rheumatic disease
- Delayed or inadequate Treatment lead to irreversible joint destruction & Case-fatality being around 11%

研究目的

- Discuss various risk factors of Septic arthritis
- examine host factors eg.TNFa,IL1&IL10, bacterial protein,toxin,enzyme in mouse models
- Need for timely medical & surgical intervention
- Based on animal model, possibility of novel adjunctive treatments including Corticosteroids, Cytokines, anticyto kines & biphosphonates

方法

- Based on databases: Cochrane Library,Medline (1951 – Aug 31,2008); Embase (1974-Aug 31,2008) & National Electronic Library for Health.
- Inclusion criteria : 1 in 4; 1)isolation of pathogen from affected joint, 2)isolation of pathogen from another sourc e(eg.Blood) with hot red joint,3)typical C/F & previous A/B 4)postmortem or pathological features suspicious of S.A
- Retrospective cohorts, case definition being bacteriologi cally proven
- Exclusion criteria = Children<16 yrs, reactive arthritis, chronic sepsis, osteomyelitis, spinal infection, prosthetic joint infection case reports

結果

- Risk factors : R.A or O.A, Jt prosthesis, Low S.E status IVDU, Alcoholism, D.M, prev: intraarticular steroid inj; skin ulcer etc.
- Usually in elderly & very young children
- 1 study => 37/7000 pts (3 yr f/u); >80 yr, R.A, recent jt Sx
- most common pathogen : Staph aureus, then Strepto;
- Elderly – G(-), N gonococcal – young adult
  Europe & north america – N meningitidis
- Mouse model – iv inject S aureus, >90% severe bone erosion in 24 hrs
- Host factors – TNFa,IL1,IL10 =>vital for immune response
  IL4 – enhance bact: growth
- Bacterial factor: Panton Valentine leucocidin PVL can survive in neutrophils => fulminant infection

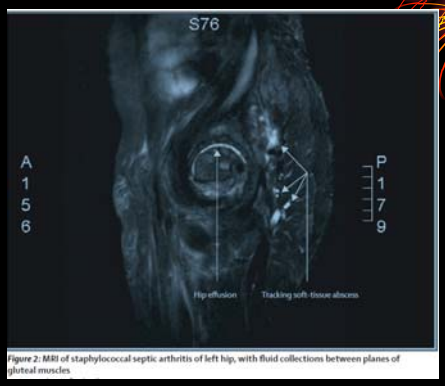


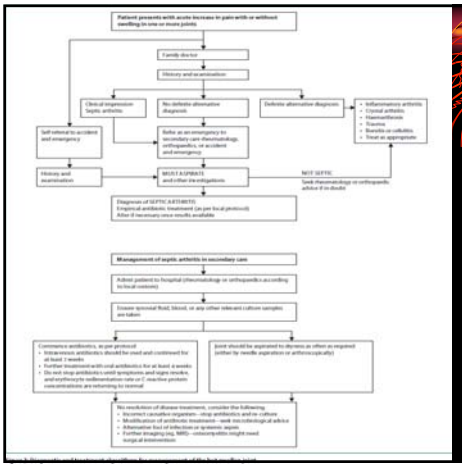
Figure 2: MRI of staphylococcal septic arthritis of left hip, with fluid collections between planes of gluteal muscles

- Clinical features : red,painful & LOM x (1-2)wks
  might delay in fungal, mycobacterial infection
  large joints (leg), fever(34%), sweats(15%)
  rigors (6%)
- Blood culture before antibiotic Tx
- Urgent aspiration to assess if possible S.A
  if prosthetic Jt = aspirate under aseptic at O.T
- Artificial crystal (+) on frig; stored at room T'
- WBC,CRP,ESR ↑ or N,but monitor response to Tx
- Liver & Renal abN = poor prognostic factors

	Proven (n=47)	Suspected (n=35)
Age (years)	66·5 (58·0-74·0)	64·0 (45·0-71·0)
Symptoms		
Pain	39 (83%)	31 (89%)
Fever	16 (34%)	20 (57%)
Rigors	3 (6%)	6 (17%)
Risk factors		
Primary joint disease	32 (68%)	18 (51%)
Leg ulcers	5 (11%)	3 (9%)
Chest infections	7 (15%)	4 (11%)
Investigations		
White-cell count (×10⁹/L)	14·4 (9·0-18·0)	14·0 (11·0-21·0)
C-reactive protein (mg/L)	175 (102-239)	224 (121-252)
Erythrocyte sedimentation rate (mm/h)	71·5 (42·0-102·0)	84·0 (62·0-110·0)
Supportive treatment		
Admission to intensive-care unit	3 (6%)	3 (9%)
Central venous line	9 (19%)	8 (23%)
Outcome		
Mortality at 3 months	4 (9%)	3 (9%)
Mortality at 2 years	12 (26%)	7 (21%)

Data are median (IQR) or number (%). Data taken from reference 35; mortality data provided by M Gupta.

Table 1: Comparison of clinical variables and outcomes between proven (synovial fluid culture-positive) and suspected (culture-negative) septic arthritis



結論

- Absence of organism on G stain or subsequent synvial fluid culture => not exclude diagnosis
- Discriminator for S.A = >5萬cells/ul (Crystal/Septic arthritis)
- Mortality – 11% (monoarticular sepsis),24%(poor function outcome, 8% (osteomyelitis)
- Mainstay Tx – prompt removal of pus material & suitable antibiotics Tx

討論 1

- Antibiotics – bactericidal against S aureus, Streptococcus
  Flucloxacillin, Cloxacillin, Cephalosporin
- M.R.S.A - Glycopeptide(Vancomycin)
- Glycopeptide intermediate S aureus (GISA) = Linezolid (B'static,oral)
  Daptomycin (Bactericidal, iv)
- Prosthetic Jt – Vancocin + (Rifampicin, Fusidic acid)/Clindamycin
- G (-) - E coli ESBL in elderly, immunosuppressed patients
  need Carbapenam eg. Meropenem
- Empirical A/B Tx guideline – should develop locally & regular update
- OPAT - outpatient parenteral antimicrobial Tx eg. Ceftrioxone,Teicoplanin

討論 2

- No evidence btw closed needle aspiration/arthroscopic aspiration
- Immune system – protective/destructive (IL1,IL10/IL4)
- Animal model : TNFa antagonist/IL 10 – adjunct to antibiotics
  biphosphanate intraperitoneal - ↓ skeletal destruction
- Study in Child : Dexamethasone (0.2mg/kg iv q8H for 12 conse: dose) with antibiotics treatment => duration of disease course, Jt damage, dysfunction
- No similar study in Adult yet

Discussion & Answering