Initial Ix & Rx Skin & Soft Tissue infection (SSTI) /bone & joint infection

tips and pointers : Marina Morgan RD&E Nov 2020

P micro for advice immediately if

1. generalised erythema- '**sunburn' or scarlet fever like- rash or conjunctival suffusion** – [Δ ? toxic shock syndrome (TSS)] *see below*
2. pain score 8-10 /10, disproportionate to signs, D&V or rash. (*could be Nec fasciitis*)

Scenarios:

A) Cellulitis bursitis/ SSTI Ask about

1. **NSAIDS** - ↑ severity Group A beta-haemolytic Strep (GAS) infection) .**STOP THEM .**
2. **trauma/ hx sore throat /contact in family with impetigo/scarlet fever /watery vaginal discharge/ balanitis/perianal dermatitis**) *all suggest GAS*
3. **D&V** may not be gastroenteritis but a Toxic Shock Syndrome (TSS) (exotoxins from staph or strep acting as enterotoxins)
4. ' **flu' symptoms**- myalgia, backache, temperature, sweats/ rigors (suggests bacteraemia)
5. **contact with/ hx MRSA** (augmentin *fluclox /cefuroxime /meropenem won't work)*
6. **lymphoedema** – ↑↑ **Gp G/C** strep risk;
7. (**recurrent cellulitis:** prophylactic 500 mg bd penicillin V after Rx & send ASOT to confirm strep)
8. **Allergies-** ? rash /worse (beware scarlet fever being misdiagnosed as allergy)
9. **PAIN SCORE**- 7-10/10 or excessive, /increasing analgesics out of proportion to area visibly affected d**/w micro urgently as could be necrotising fasciitis**

Do not wait for skin changes before considering NF [bluish discoloration skin or blistering] to appear – v late sign as ? deep NF organisms rising to surface; beware compartment syndrome

Examination: - Mark boundaries of cellulitis *(pt may have pics of earlier on phone to compare)*
? ask hospital photographer to take pics for notes)
- examine skin for entry routes (scratches, boils, athletes foot, infected bites)
Blistery usu strep, 'peau d'orange' usu staph
- note regional lymphadenopathy & lymphangiitis (↑↑ with strep infections, occ Pasteurella)

Investigations:

1. **blood cultures**- even if apyrexial
2. **FBC, CRP and CK**:

- Lymphopenia: esp in severe Gram positive infection, **if 0.1-0.2 d/w micro**
- CRP > 200 = severe infection. [Rule of thumb; CRP > 50 and unwell with clinical infection needs abcs, If CRP > 100 iv abcs usu necessary if can take orally well absorbed abcs] Repeat bloods in 4 hours
- CK – if significantly raised ? myositis.. If v high, may be TSS or strep- TSS. *not a marker for NF per se unless muscle damage in deep fascia infection*

Swab:- open wounds, throat and nose swabs ("for full culture" otherwise only examined for MRSA)
Pre moisten wound swabs sterile water (except T/S) (maximal pick-up of bugs from dry skin)
Genital swab if watery vaginal discharge /abdo pain /pregnant

Treatment severe SSTI/exotoxin- related infections:

1 abcs to switch off exo-toxin production- clindamycin, linezolid or daptomycin.
2 *Note Penicillin or flucloxacillin- no effect exotoxins(can actually increase exotoxin production*) .
3 *TSS or severely unwell consult micro –may need immunoglobulin (2g / kg) for direct neutralisation of exo-toxins.*

B) Post-operative wound infection : ask about

- time since op, current /recent antibiotics (*change them if not working!)*
- rising CRP & platelets = ?? collection
- wound leakage- ? pus or sero-sanguinous/… blisters suggest streps
- history suggestive of bacteremia? [rigors/myalgia/sweats etc]
- MRSA hx/contact-(esp if health care worker.. may be carrier)

Animal bites/scratches-*Pasteurella multocida*= Gram neg note **R fluclox and erythromycin & clindamycin**, & esp associated with PJI in pts with RA)

Investigations:
Daily FBC, U/E CRP as above CK if myositis or deep NF (repeat bloods CRP CK etc ; 4 h apart if ?myositis /NF)
T/S & N/S - form labelled "**for full culture**" – looking for patients "background flora" & resistance of bugs)
wound swab- pre-moistened if dry, clearly labelled with details- esp if eg "*underlying metalwork*"

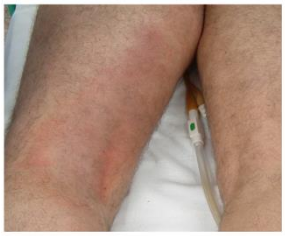
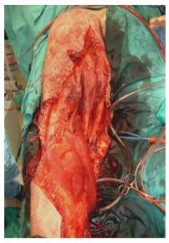
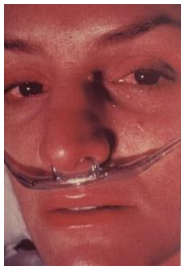
C)" ? septic arthritis"
history- as above plus
- gout/animal bites/ insect bites
-' flu- like symptoms' [myalgia /rigors/sweats] - *suggests bacteremia*
- tick bites [*or knee swelling massively cf symptoms] hx f walking in scrub*] need Lyme
- Heart murmurs – endocarditis

Specimens: 2 sets BC plus Joint aspirate : - some into plain container Gram stain and culture
Some directly into blood culture bottles *clearly label as joint fluid* & some plain specimen bottle for crystals

Toxic shock & PVL *S. aureus* (MRSA/MSSA)
Athletes/military /young fit people with recurrent SSTI/abscesses
- ↑↑ risk of severe SSTI; Resilience of the military & athletes & tolerance to lactic acidosis makes it really difficult to assess severity of infection: often seemingly normal rate - *may not have an obvious tachycardia or hypotension (as with non athletes with sepsis)*
Inform microbiology on call if any military /athletes admitted with SSTI because:.
-↑↑chance of
1 clindamycin resistant organisms, eg GAS & *S aureus*
2 *S aureus* producing leukocidal toxin (Panton Valentine Leucocidin- PVL)
PVL causes recurrent abscesses and boils, occasionally a fatal haemorrhagic necrotising pneumonia, especially in young adults, features hemoptysis/normal or low WBC /£RR > 20 HR .
Hence initial Rx for very sick pts with SSTI related sepsis MUST cover ALL staph [MRSA , *PVL producers*]and clindamycin --resistant staphs and streps: *hence linezolid or daptomycin options*
After blood cultures - stat gentamicin + linezolid 600 mg bd (orally or iv) plus iv flucloxacillin 2g qds & *d/w micro* *[if on SSRTIs, risk of serotonin syndrome so avoid linezolid - use daptomycin 5mg/kg]*
Vancomycin has no effect on exotoxins and kills MRSA only slowly

Toxic shock syndrome: (TSS= staph TSS, ALL have sunburn rash, *c.f STSS -= strep TSS) ; only 10% have rash*

- hypotension, organ failure- renal, high LFTs, DIC/low platelets, multi-organ failure (MOF),
- sunburn -rash (always in staph TSS, 10% of strep TSS)
- hyperaemic mucus membranes/conjunctivae(red eyes), CNS changes but no focal neurology,
- V or D(exotoxins acting as enterotoxins) …..:call micro /ITU immediately
- conjunctival suffusion and rash- typical of TSS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Above: 1 & 2 GAS nec fasciitis [sent in as ? DVT] back thigh & same pt post op

Extreme right: (3) TSS: note conjunctival erythema