

TO BE OR NOT TB

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CASE

- 60 year male from India
- TURP in India 9/5/11 for BPH
- Visiting son in Australia, on tourist visa
- Previously well, walked 5km per day & practiced yoga

- First presentation 25/6 with urinary retention
- Given stat doses of ampicillin & gentamicin
- Urine 20 WBC no growth
 - Taken one hour post antibiotics
- IDC inserted
- Patient discharged with outpatient urology follow up for trial of void on 6/7
- Trial of void successful, patient discharged home

- Represented to ED on 9/7:
 - intermittent rigors & fever for 1 week
 - diaphoresis past 2 nights
 - haematuria & central lower back pain
- Assessment: febrile, tachycardic, oliguric

Suggestions for Empiric Antibiotic Management?

- Given ceftriaxone & sent to ward
- BC from 9/7 both bottles positive GNB
- ID Registrar on weekend advised tazocin plus ciprofloxacin
- Day 3: MET call for hypoglycaemia and ongoing oliguria
- Urine isolate from 9/7 growing *E.coli* pan-resistant on direct sensitivities
- ID Registrar called medical team to advise change to meropenem

- Day 3: transferred to nephrology oliguric renal failure
- Blood culture: ESBL producing *E.coli*
 - Resistant to ciprofloxacin, gentamicin
 - Sensitive to amikacin, meropenem
- Renal U/S: normal perfusion & corticomedullary differentiation, no focal lesion

- Continued to deteriorate, hypotensive, decreased conscious state, persistently hypoglycaemic
- Transferred to ICU for inotropic support & renal replacement therapy
- Received vancomycin & meropenem: doses adjusted when not on filter

- Day 7: complete heart block requiring pacing
- Ongoing hypoglycaemia
- Persistent *E.coli*, high WCC in urine
- Ongoing fever despite broad spectrum antibiotics
- MRI: bilateral SDH
 - no ring enhancement to suggest empyema
 - Neurosurgical consult: not for surgical management

- Day 12: CT multiple renal abscesses & infarcts bilaterally with right renal artery stenosis (final report)



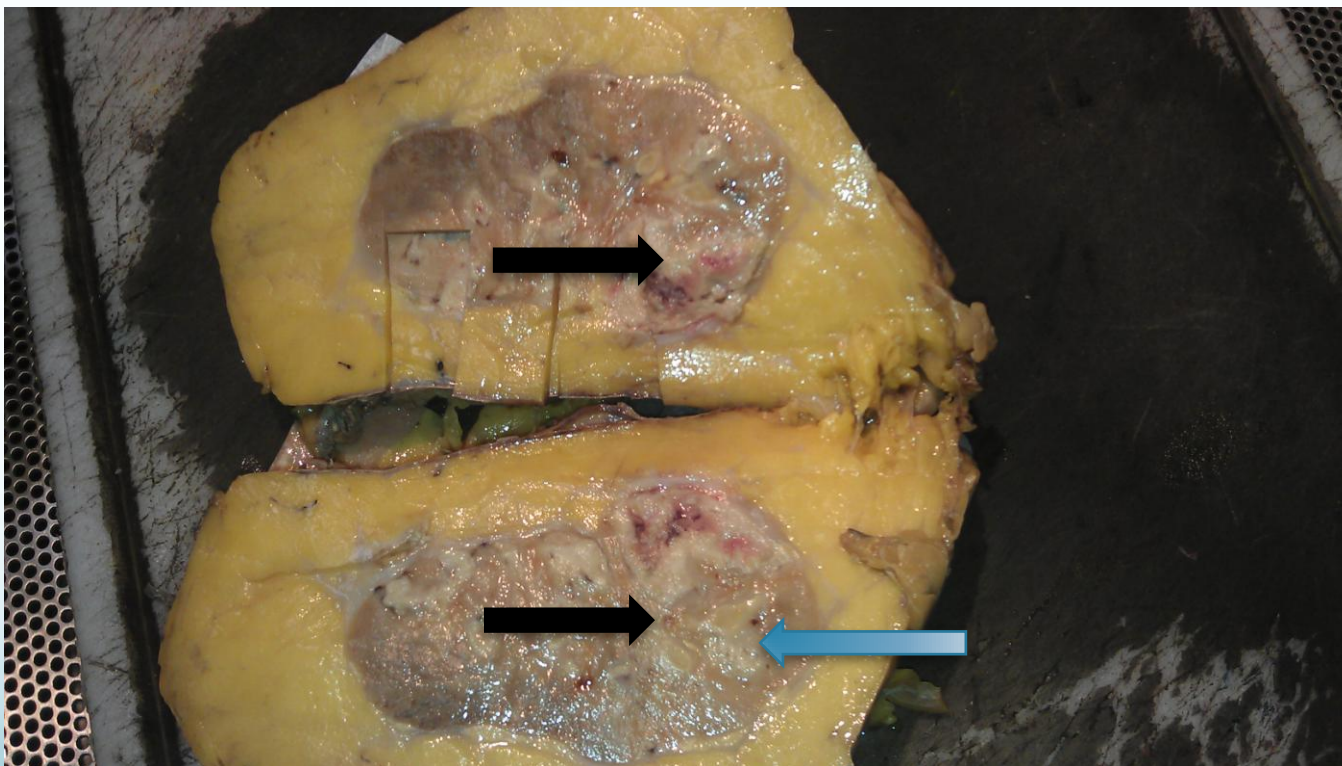
Management Suggestions?

- Day 18: Meropenem ceased
- Day 21: ESBL producing *E.coli* again isolated from urine with high WCC, patient febrile
- Day 22: meropenem restarted with stat dose vancomycin in case of line sepsis
- Day 23: permacath inserted
- Day 24: ID r/v
 - Recommend continue meropenem

- Day 27: renal perfusion scan: multiple infarcts & abscesses in both kidneys, left function worse than right
- Day 31: CT: maturing of multiple bilateral abscesses. Perinephric stranding improved. Urology consulted.
- Day 37: Peripheral BC +ve GPC ?
Streptococcus/Enterococcus
 - VRE colonised
 - Teicoplanin started after repeat BC from all lines
 - Subsequently identified vancomycin resistant *E.faecium*

- Day 38: MET call, readmitted to ICU
- Day 44: Left nephrectomy with patient improvement
- Rumour of necrotising granulomas on histopathology
 - Whole kidney placed in formalin, no culture
 - TB PCR negative
- Urine x3: TB culture negative

Discussion with Anatomical Pathologist and review of histopathology

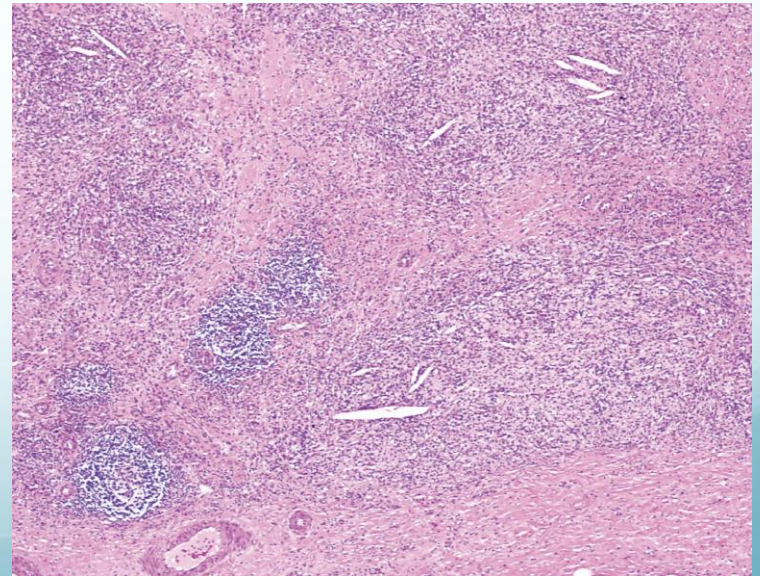


Theories on aetiology of infection?

HISTOPATHOLOGY

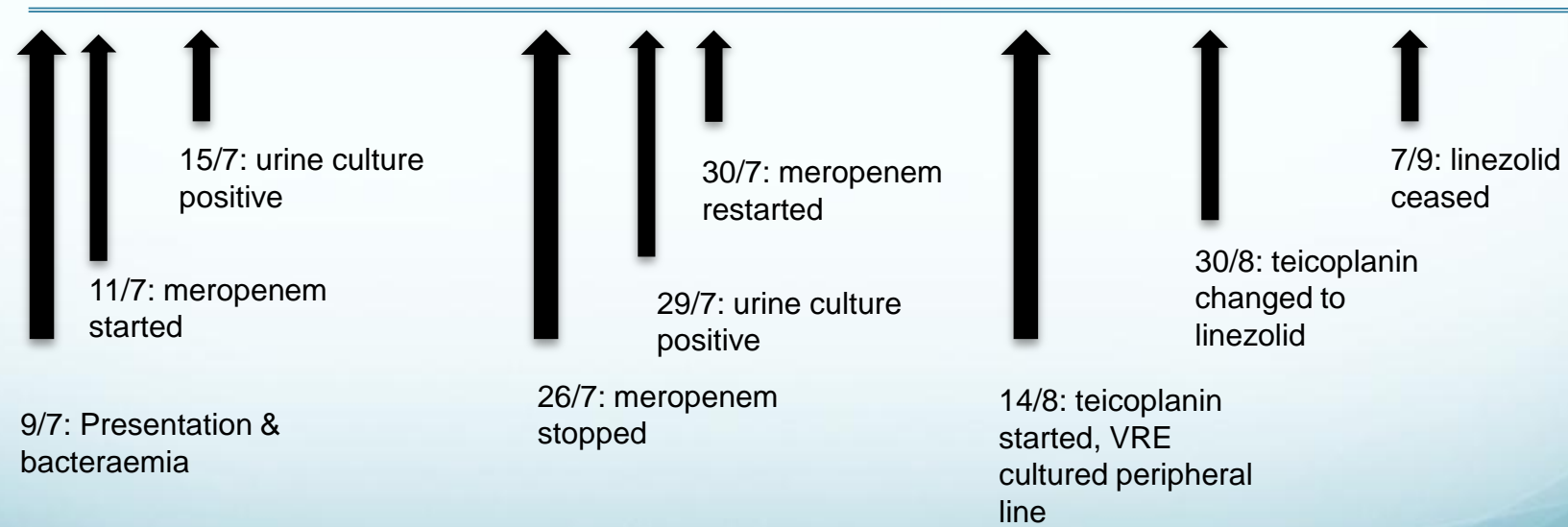
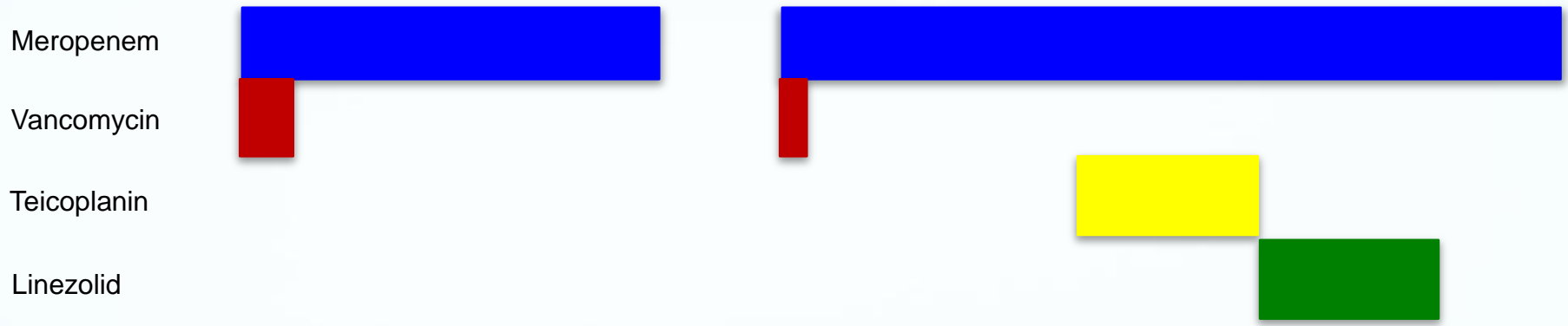
- Macroscopic:
 - Multiple pale tan to white necrotic areas throughout whole kidney, not extending through the capsule
 - Proximal pelvis mildly dilated & contains creamy soft material
 - Corticomedullary junction ill-defined
- No adrenal gland identified

- Microscopic: multiple small micro abscesses
 - Areas of xanthogranulomatous inflammation with sheets of histiocytes, multinucleated giant cells, plasma cells
 - Background of chronic inflammatory cells around the tubules
 - Large areas of necrosis
 - ZN & PAS stains negative
 - No evidence of malignancy

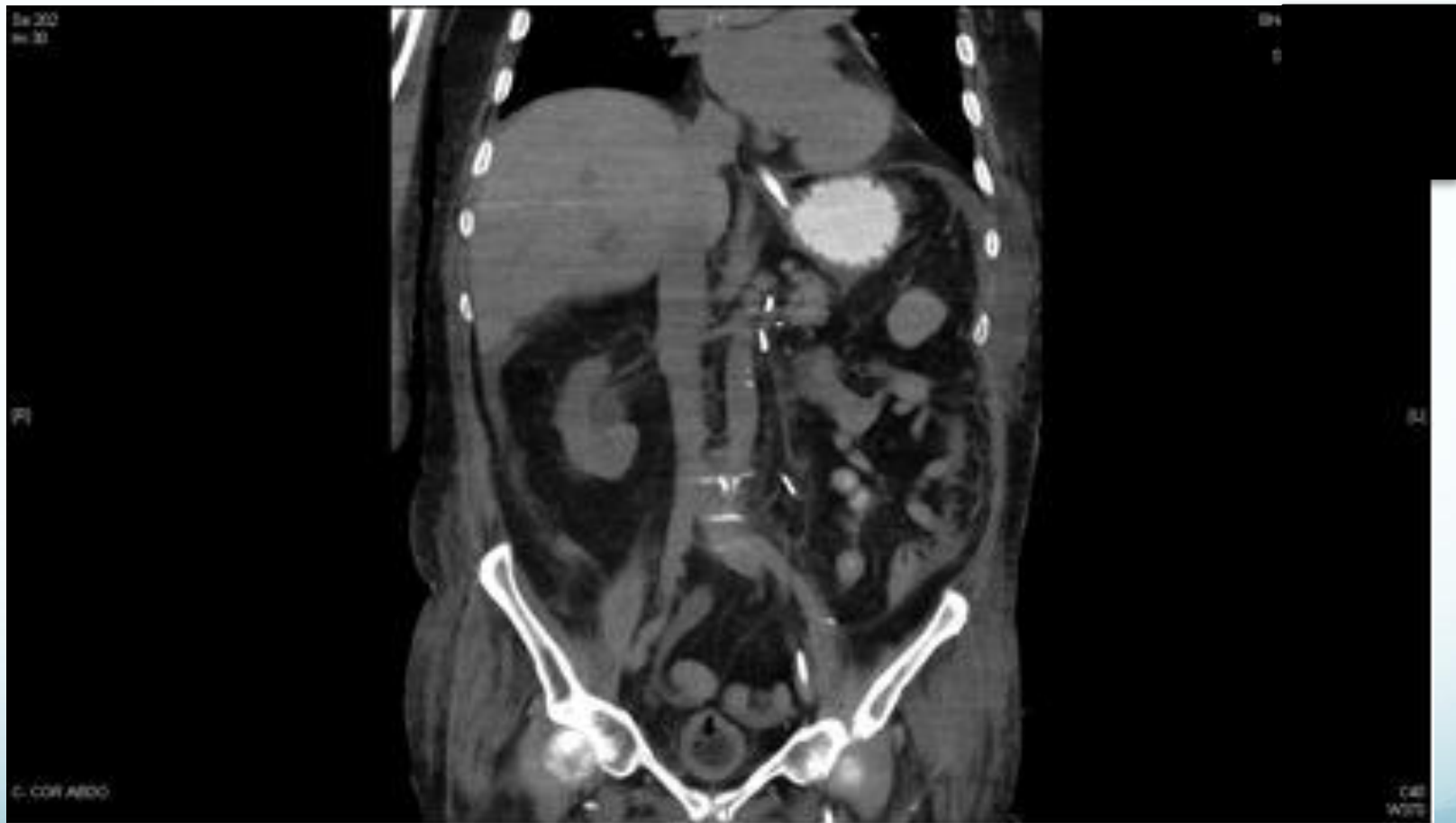


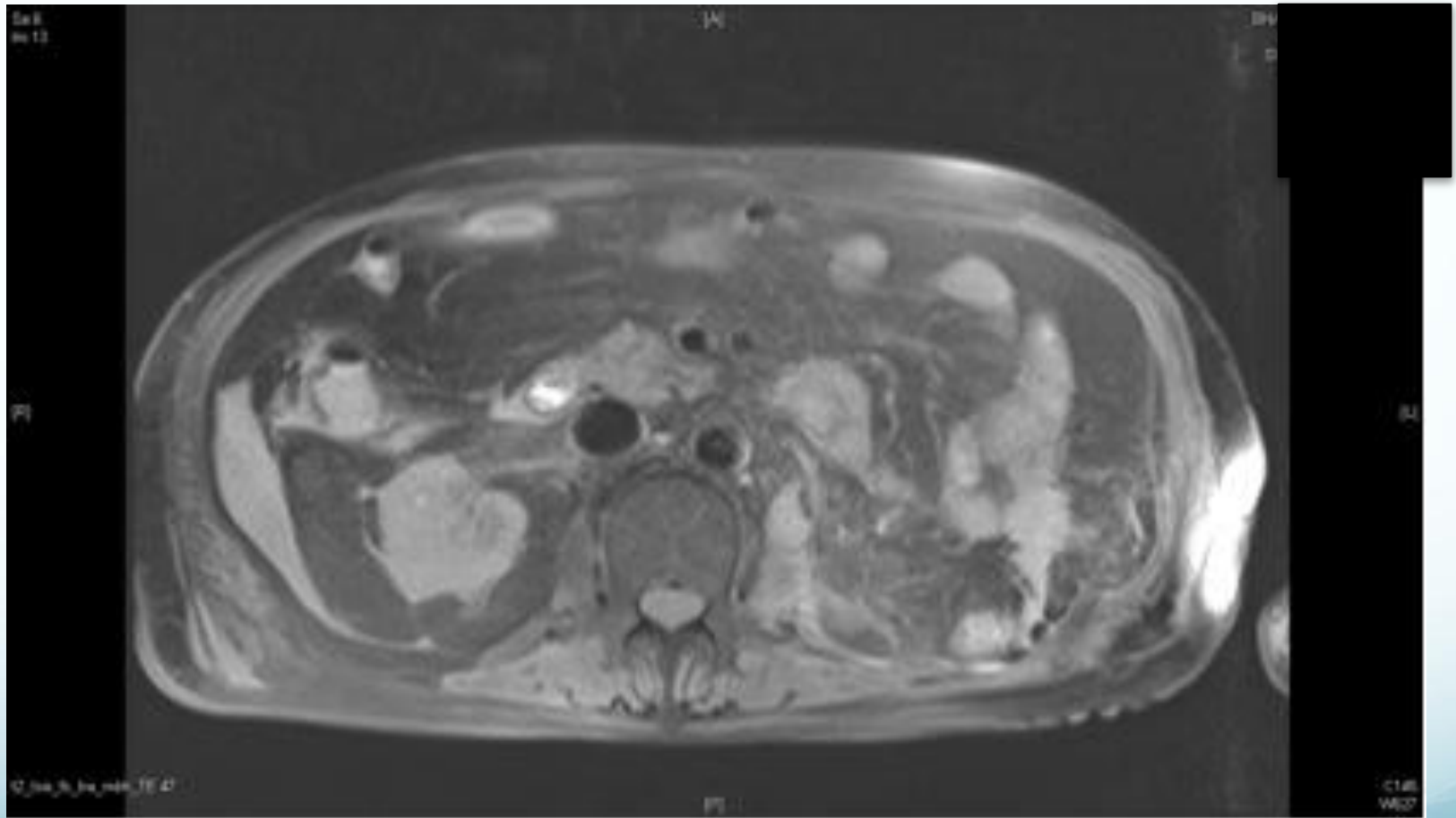
**XANTHOGRANULOMATOUS
PYELONEPHRITIS consistent with
chronic Gram negative infection**

- Day 48: hypotensive episodes when permacath used. Episode of SVT.
 - Permacath removed, teicoplanin changed to linezolid
 - Permacath and all blood cultures negative
 - Patient improved & did not require ongoing dialysis
- Day 52: D/C to ward
 - Meropenem & linezolid continued



- Day 56: readmitted to ICU
 - aspiration pneumonia secondary to critical illness myopathy
- Day 65: CT – multiple pockets of fluid in left kidney bed & paracolic gutter with stranding throughout both flanks
- MRI:
 - loculated fluid collections in left renal bed
 - DDx: Haematomas/seromas or small abscesses
 - lack of T2 hyperintensity or diffusion restriction of right kidney favours granulation tissue.
- MRI brain: resolution of SDH





Discussion

- Definition
- Histological characteristics
- Types
- Review of the literature
- Summary

Xanthogranulomatous Pyelonephritis

- Rare, mainly histological diagnosis
 - <1% renal infections
- Mainly caused by *E.coli*
- Chronic infection & obstruction
- Variation in male:female predominance
- ? Malakoplakia same diagnosis just different stage of disease (Michaelis-Gutmann bodies)
- CT imaging of choice
- Higher incidence in paediatric population

Histology

- Accumulation of foamy lipid laden macrophages
- Interspersed with plasma cells, lymphocytes, pus cells and occasional giant cells
- The large yellow nodules of macrophages can be confused with renal cell carcinomas
- Often associated with renal stones, can sometimes co-exist with carcinoma

Robbins Pathologic Basis of disease (Cotran et al)

Up to date online

Types

- Type I: disease confined to renal parenchyma only
- Type II: involves renal parenchyma and perinephric fat
- Type III: also involves adjacent structure or diffuse retroperitoneum
- Sub-typed as focal, segmental, diffuse

Xanthogranulomatous Pyelonephritis: A Retrospective Review of 16 Cases

- 16 biopsy proven cases
- Most common symptoms: flank pain, dysuria & fever
- All anaemic, 70% pyuria, insufficient data on bacterial pathogens
- All unilateral disease with non-functioning kidney on DTPA → nephrectomy
- No extra-renal disease

Xanthogranulomatous pyelonephritis: critical analysis of 30 patients

- Taiwan series 1991-2008
- 25 women, 18.6% of all nephrectomies for pyelonephritis, 66% obese
- Average length of symptoms 79 days, CT best imaging modality
- XGP diagnosed in two patients pre-operatively
- Nephrocutaneous & nephrocolonic fistulas common
- 77.8% had two stage procedure
- Renal impairment common

Xanthogranulomatous Pyelonephritis: Report of Nonsurgical Management of a Case and Review of the Literature

- 27 month old boy with focal disease
 - successfully treated with antibiotics alone
- 6 weeks antibiotics
 - Ceftriaxone, ampicillin, gentamicin
- Focal more common in children
- Percutaneous biopsy not helpful in diagnosis
- Late complications
 - Chronic renal impairment
 - Renal amyloidosis

Review Article: Xanthogranulomatous Pyelonephritis

- Mean age 45-55 (range 2-84)
- Gender predominance variable
- Complications in one-third of cases
- Pyuria 57%, positive urine culture 61-89%, diffuse disease 85%, renal calculi 47-100%
- CT diagnostic imaging of choice, MRI also helpful
- Fine needle aspiration can confuse the diagnosis
- Low mortality cf. malakoplakia
 - But is it really the same diagnosis?

Summary

- XGP rare & difficult to diagnose without histopathology
- Associated with chronic gram negative infection & obstruction
- CT best imaging modality
- Diffuse disease best treated with nephrectomy
- Focal disease can be managed with antibiotics alone in selected cases

Changes in Microbiology: Southern Health

- All gram negative bacilli in blood cultures now have direct sensitivities
 - Available in 12-24 hrs post positive Gram stain
- Direct sensitivities discussed with clinicians in regards to ongoing antibiotic choice

Discussion: what do you do at
your hospital?
When should we stop
meropenem?