Auckland District Health Board
Starship Childrens Health
Neurology
(Clinical Summary)

Master William Ross BURTON
UNQ8770 [DoB: 13/07/2013] Male
[redacted] Wellington,
New Zealand
Ph: [redacted]

To: Dr Jeffrey LOWE

Admitted: 22/10/2013 04:00

Discharged On: 07/11/2013 10:22
Ward/Location: Ward 26A

Reason for Referral
e coli meningitis, seizuresm subdural empyemas with washout

Diagnoses
Primary Diagnosis
· E Coli Meningitis with bilateral subdural empyemas
Secondary Diagnoses
· Seizures
· Bilateral thalamic and multifocal infarcts

Procedures
Primary Procedure
· Drainage of intracranial infection via burr holes, - --Surgeon was Peter Heppner, 22/10/2013 16:25
Secondary Procedure(s)
· Central vein catheterisation Jugular, - --Surgeon was Annette Chang, 02/11/2013 14:54

Discharge Medications
· Paracetamol, 70mg po/ng q6h, 1 month (script given)
· amoxicillin, 365mg IV q6hrly, 6 weeks from 31.10.13 (script given)
· nilstat, 0.5ml po qid, 3 days (script given)
· levetiracetam, 140mg ng / po bd, 1 month (script given)
· phenytoin, 33mg ng q6hrly, 1 month (script given)

Allergies
nkda

Clinical Management
Background:
- Born at term, previously fit and well.

Transferred from Wellington with E.coli Meningitis
Unwell for 6 days with fevers and vomiting. Had 2x ED presentations 16/10/13 and 17/10/13 thought to be viral illness / gastroenteritis at that stage.
Represented 21/10/13 with decreased oral intake, diarrhoea and fever. Noted to have bulging fontanelle.
Given 20ml/kg fluid bolus, cefotaxime, amoxicillin, gentamicin and dexamethasone (then stopped) .
Septic screen done. LP revealed gram negative bacteria in CSF later confirmed as E.coli.

After transfer to the ward he had generalised tonic-clonic seizure requiring airway support and bag mask ventilation, midazolam given, loaded with 20mg/kg phenytoin then another 15mg/kg and a further 10mg/kg in ICU (total 45mg/kg). Further seizure in ICU requiring midazolam.

CT head revealed subdural collections and evolving hydrocephalus.
Platelet count 28, so given 15ml/kg platelets.

Discussed with neurosurgeons and transferred to Starship PICU. Electively intubated for transfer.
MRI 22/10/13 - moderately large volume left fronto-temporo-parietal convexity subdural empyema and small right fronto-temporal subdural collection with pus in subarachnoid spaces and ventricular system and developing hydrocephalus. Small acute non-haemorrhagic basal ganglia and right periventricular white matter infarcts.
Proceeded to OT on 22/10/13 for left burr hole drainage .
Continued on IV cefotaxime as per sensitivities, amoxicillin and gentamicin stopped on 22/10/13. Antibiotics further reviewed on 26.10 because of irritability, persistent fevers and elevation of CRP despite 5/7 of cefotaxime.

Transferred to the ward on 24/10/13
Had abdo distension and irritability, AXR 23/10/13 showed some intraluminal air. Reviewed by Gen Surg. Because of irritability and poor feed intolerance, NEC suspected and antibiotics broadened to include amoxicillin and metronidazole. USS 27/10/13 abdo was normal, no evidence of NEC. Resolved spontaneously. Antibiotics subsequently rationalised to Amoxicillin only.

Left Leg Non-occlusive thrombus
Developed swelling of left leg after central line insertion - which was then removed and replaced with L saphenous PICC line. USS 25/10/13 showed nonocclusive thrombus within the left common femoral and external iliac veins. Haematology was consulted, however he was not anticoagulated for this as the risk of intracranial bleed outweighed the risk of clot. Leg swelling improved spontaneously during admission.

Seizure Activity
Further to Generalised Tonic Clonic seizure on presentation, William had bilateral upper limb twitching on 25.10 ? seizures. EEG 29/10/13 - No epileptiform discharges and no subclinical or electroclinical seizures.
However there was excess slow activity and poor organisation over the right hemisphere.
Increase in slow activities and lack of variability over both hemispheres although the left hemisphere demonstrated periods of normal activity.

On 30/10/13 developed hyperextension of hips and flexion of ankles, with clonic jerking movements ?seizures. Phenytoin levels remained subtherapeutic, reloaded twice on 31.10 and 1.11.13, Phenobarbatone and midazolam given. Levitiracetam started as maintenance.

MRI 30/10/13 - increased column of subarachnoid pus and meningeal thickening consistent with meningitis progression. Progressive hydrocephalus with small volume subdural empyema. New cortical infarctions in right MCA territory, right internal capsule, right caudate and left frontal lobe.

Neurosurgical Registrar Muthu discussed MRI findings with parents and discussed with the extent of parenchymal damage there is a risk to intelligence, development and motor weakness however it is too early to prognosticate at this stage.

Had LP with 15ml CSF drained on 30/10/13 as a result of this MRI result.
- negative gram stain and culture but 69% neutrophils

Readmitted to PICU on 31/10/13 for increasing number of posturing movements - flexed arms, extended lower limbs with plantar flexion. Concerns that these were decerbrate posturing vs seizures. No correlation of the episodes with seizure activity on BRAINZ monitoring, so most likely posturing, however there were electrographic seizures over left hemisphere noted as well with ? correlation with right eye deviation. No improvement with midazolam infusion. full fontanelle, not bulging, head circumference stable at 44cm.

Repeat EEG 01/11/13 - Very abnormal recording. There is little in the way of normal activity and the EEG is of very low amplitude with occasional potential epileptiform transients. There is no clear-cut change in reactivity when the baby is stimulated. No seizure activity is seen.

Transferred back to ward on 02/11/13. No further seizures / postural activity noted.
Concern that William is not fixing or following, and not sucking. Seen by SLT who noted no reflexive sucking, however he is still very drowsy and likely to have little interest in oral feeding at this time.
On full NG feeds and will require ongoing SLT input.

Prior to discharge he was stable and had remained afebrile for >72hrs.
Phenytoin trough 06.11.13 = 41 (stable). CRP still elevated at 126. LFTs: elevated GGT 270, ALT 57

Plan:
1) Transferred to Wellington General paeds under Dr [redacted]
2) IV atibiotics to continue for 6 weeks from negative CSF on 31/11/13
- Via Hickman line inserted 02/11/13
3) Check head circumference 2-3 times a week
4) If any concerns - i.e. increasing HC or fontanelle tension, please phone neurosurgeons and repeat MRI
5) MRI scan to be done at end of ABX treatment - call neurosurg for review after scan result
- Does not need neurosurgical follow up in clinic.
6) To continue on Phenytoin and Keppra at current doses
7) SLT input with sucking / feeding
8) Audiology review and ? Ophthalmology review
8) Repeat LFTs and check phenytoin trough on friday

Clinician: Couper,Grace
For Consultant: Dr Sue Davis

Signature:
Date: 07/11/2013 10:23