ROYAL COLLEGE of PHYSICIANS of EDINBURGH

Evening Medical Update: Unconscious Patient
Tuesday 24 September 2019

Suspected meningoencephalitis: management strategies – Dr Andrew Storey

Is there a scale like MRS for assessing rehab potential?
I don't know of a specific index.

How much benefit has there been with vaccination for Meningococcal illness? Specifically Men B which we now give to kids in Scotland.
There has been a significant reduction in carriage and cases of Men A and C confirmed, though insufficient data as yet regarding the impact of Men B vaccination. Impact seems significant enough to have negated traditional peak of bacterial meningitis in the young.

Why not to give antibiotics if no signs of meningococcal disease, sepsis or >1hr to Hospital?
Evidence points to improved outcomes where LP can be done prior to antibiotic given with an improved diagnostic yield. Though of course were urgency necessitates i.e. Meningococcal, severe sepsis, delayed transfer then antibiotic should be given.

Should aciclovir be given pre-hospital?
No, and the window for commencing acyclovir following arrival at hospital is 6 hours.

If signs not helpful and rash not always there, why to withhold antibiotics?
Ideally LP should be undertaken where possible prior to antibiotic, thus improving diagnostic yield. Of course if convincing evidence of serious/aggressive infection i.e. meningococcal or severe sepsis, or if delay in transfer then important that community antibiotic is administered.

How common is herpes simplex/viral encephalitis in practice, considering how devastating it can be?
Incidence is around 1/250,000 per annum.

Is there a role of checking pro calcitonin in management of suspected bacterial meningitis?
Yes, if available request a CSF procalcitonin which is a sensitive way of distinguishing between bacterial and viral meningitis.

You give dexamethasone for pneumococcal meningitis but not meningococcal, why and how would you distinguish before LP result?
Not easy to distinguish with certainty prior to LP so in any case of suspected bacterial meningitis give steroid along with antibiotic, then discontinue steroid only when pneumococcal has been excluded.

Just a thought, as a psychiatrist bear in mind psychosis and abnormal behaviours especially in the elderly pop. Would you still give a steroid?
Yes, evidence shows a reduction in mortality at least in pneumococcal disease as well as reduced complication rates, especially hearing loss, so worth giving and then dealing as necessary with any psyche adverse effects (which should be short lived).

Is there any role for outpatient antibiotics in selected patients with meningitis?
Yes, e.g. in pneumococcal meningitis, if the patients afebrile and improving after at least 5 days in-patient treatment then OPAT with ceftriaxone 4g od can be considered. Liaise with microbiology.

Are you not giving the pre hospital antibiotics here because > 60 so meningococcal disease less likely?

This case had no clinical indicators of meningococcal disease, no severe sepsis, and a transfer time of 40 minutes. Yes, the age of the patient does make pneumococcal or listeria more likely.

What do we do with suspected viral meningitis - PCR to confirm takes days.
Treat the patient, if clinically they are meningetic, and CFS cell count suggests viral, then no need for acyclovir. Viral meningitis is not a threatening condition.

Are there any non-invasive tests available to rule out meningitis?
No way to confidently rule out in patient who clinically has meningitis without doing a lumbar puncture.

Is a capillary blood glucose (BM) sufficient of within normal range, rather than a venous glucose?
Yes. It is best practice to check a lab glucose because of the possibility that fingerpick BM may prove inaccurate by around 10-15%.

What volume of CSF will you need?
If clinically indicated TB culture requires approx. 6mls, otherwise less is required e.g. 20 drops each specimen for biochem, cell count and culture, PCR. Don't fear taking too much though – production of CSF is around 22mls per hour so can safely take e.g. 15mls.

In patient presented with suspected meningitis and on clopidogrel or warfarin where LP is contraindicated shall we treat empirically?
Yes, if you suspect meningitis clinically then commence antibiotic after taking blood cultures and within 1 hour

How many people have actually seen papilledema in their clinical practice?
Admittedly fundoscopy skills have probably waned in the advent of retinal photography but MRCP candidates are expected to be able to view fundi and can hope to pick up papilloedema. In practice failure to view fundi should not necessitate CT prior to LP especially in patient with relatively acute history.

As healthcare workers coming in regular contact with meningitis patients, how often do you take prophylactic treatment?
Not required unless 'kissing contact' i.e. close family

How long do you think it will be before traditional lab culture (blood or CSF) is redundant due to easily accessible PCR for bacterial/viral causes?
This may well happen soon in terms of diagnostics, though of course culture affords antimicrobial sensitivity testing which will be increasingly important as bacterial resistance increases.

Would you not be better doing the MRI scan looking for the temporal change rather than putting the patient through another LP?
Normal MRI goes against viral encephalitis, but the temporal changes of viral meningitis can also occur in e.g. limbic encephalitis, so does not confirm aetiology.

Why does HSV target the temporal lobes?
Not known with certainty, but thought to be due to progression of the virus along the olfactory pathway or from the trigeminal nucleus

Repeating LP until PCR negative for viral encephalitis - does this also apply to viral meningitis?
No, viral meningitis is not threatening condition, does not require treatment, and does not require repeated lumbar puncture

If your initial LP was negative for PCR and you've already started treatment then the second LP is negative. Can you safely stop the antiviral?
If second LP is negative, patient has unaltered consciousness, CSF WCC<5, and patient has normal imaging then acyclovir can be stopped. In practice if second LP is negative then patient very unlikely to have HSV encephalitis, but best to run these by neuro/ID

Should we repeat LP if first negative in all patients we suspect have viral encephalitis, even if getting better with acyclovir?
Yes, you don't have a diagnosis. Improvement on acyclovir may well mean viral encephalitis but need to confirm.

What happens if unable to perform LP on this type of patient?
Treat empirically – if you suspect viral encephalitis then treat as such. MRI may provide supportive evidence (though not conclusive)

What if LP remains positive for PCR? Is there an alternative treatment at this point?
In viral encephalitis no alternative but to continue acyclovir and repeat LP after one week.

What would you advise for those of us in rural location, where storage & transport of LP samples out of hours is extremely challenging?
Discuss with your local laboratory service, though storage should not be an issue, and presumably transport e.g. from Gilbert Bain Hospital, Western Isles Hospital or the remote mainland Highland hospitals should be delayed no more than 24 hours. Until proven otherwise, treat clinical meningitis or encephalitis with antibiotic and antiviral.

Should you give steroids before antibiotics?
Antibiotic is the priority, so best to give antibiotic prior to steroid.

Which patients with meningitis need to be referred to infections disease team?
Depends on the local service, but e.g. patients with diagnostic uncertainly, unusual organisms. Complications, disease severity. Best to check local ID service policy.

Shall we do LP if very high opening pressure but normal CT?
Knowing opening pressure implies that LP is underway – send the fluid! Pressure often elevated in CNS infection and doesn't endanger act of lumbar puncture. Raised ICP e.g. due to SOL on the other hand will preclude safe LP.

If you have a diagnosis of viral encephalitis why is it necessary to do an MRI? Would it change your management regardless of result?
Request MR ASAP i.e. prior to LP results being known and diagnosis confirmed. You can't be sure LP will be diagnostic so MR may help with diagnosis. But even if LP gives diagnosis having MR may help, with view to interval scan to check for improvement/progression etc.

What about checking the INR?
Not safe to perform LP unless INR<1.5 but no need to check (and to delay LP) unless reasonable to anticipate that INR will be abnormal e.g. patient on Warfarin, or liver disease etc.

What's the abnormality in MRI in encephalitis?
HSV encephalitis tends to cause T2 hyper intensity pattern in temporal and frontal lobes, sometimes with haemorrhage.

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Drugs and the unconscious patient – Dr James Dear

What about using Fab fragments in colchicine toxicity?
Great question. Only effective in pigs when given very soon after colchicine. Not current available for humans but it may eventually have a place, perhaps if given early.

Why do an ABG for opioid poisoning?
To assess severely of type 2 respiratory failure. More important in sedative overdoses when naloxone not active.

Malignant neuroleptic syndrome Vs serotonin toxicity
NMS – dopamine blocking drugs, hot, rigid, no clonus, high CK, usually withdrawn.
Serotonin Tox – serotonin stimulating drugs, hot clonus ++, agitated, high CK.

Can you give cold saline to cool someone down?
Yes

Other than ice baths what other methods can you cool someone down?
Cover patient in ice, cold fluids, cold bladder irrigation, arctic sun cooler, fans and importantly benzodiazepines.

Do we start NAC in mixed overdose while awaiting level?
Yes, if the level is not going to be back within 8 hours of time of overdose and the patient reports taking more than 150mg/kg in a single overdose.

How often do you see verapamil/diltiazem poisoning?
Relatively common. I don't have precise numbers but not rare.

What is the mechanism of IV calcium in diltiazem toxicity?
Increase calcium concentration to overcome the calcium channel block. Only has an effect in about half of people.

In calcium channel blocker poisoning by how much does controlling blood sugar improve prognosis
High dose insulin is probably the more effective agent for increasing BP. Note it is high dose – up to 10 units/kg/hour. There aren't any good clinical trials to guide us but consensus across experts support its use.

Should community staff be carrying Naloxone, in high risk areas?
Yes, I think that could be sensible. We are giving it to patients to take home so staff having it seems appropriate. With training, of course.