

“Time is Brain”, Management of Suspected Meningitis in a Tertiary Care University Hospital.

M.Murphy, J.Honan, E.Kearns, A. Dolan, S. McNicholas,
R.MacNamara, S. Waqas



UCD Dublin Quinn
School of Business



1. Introduction

Meningitis is a medical emergency with a critical mortality rate which requires immediate intervention. Delay in treatment per hour is associated with a 30% relative increase in mortality.

The aim of this study was to assess adherence with hospital meningitis management guidelines secondary aim was to compare our results with current literature to provide recommendations for optimal compliance and patient outcome.

2. Methods

A prospective observational study on the management of suspected meningitis was undertaken over four months.

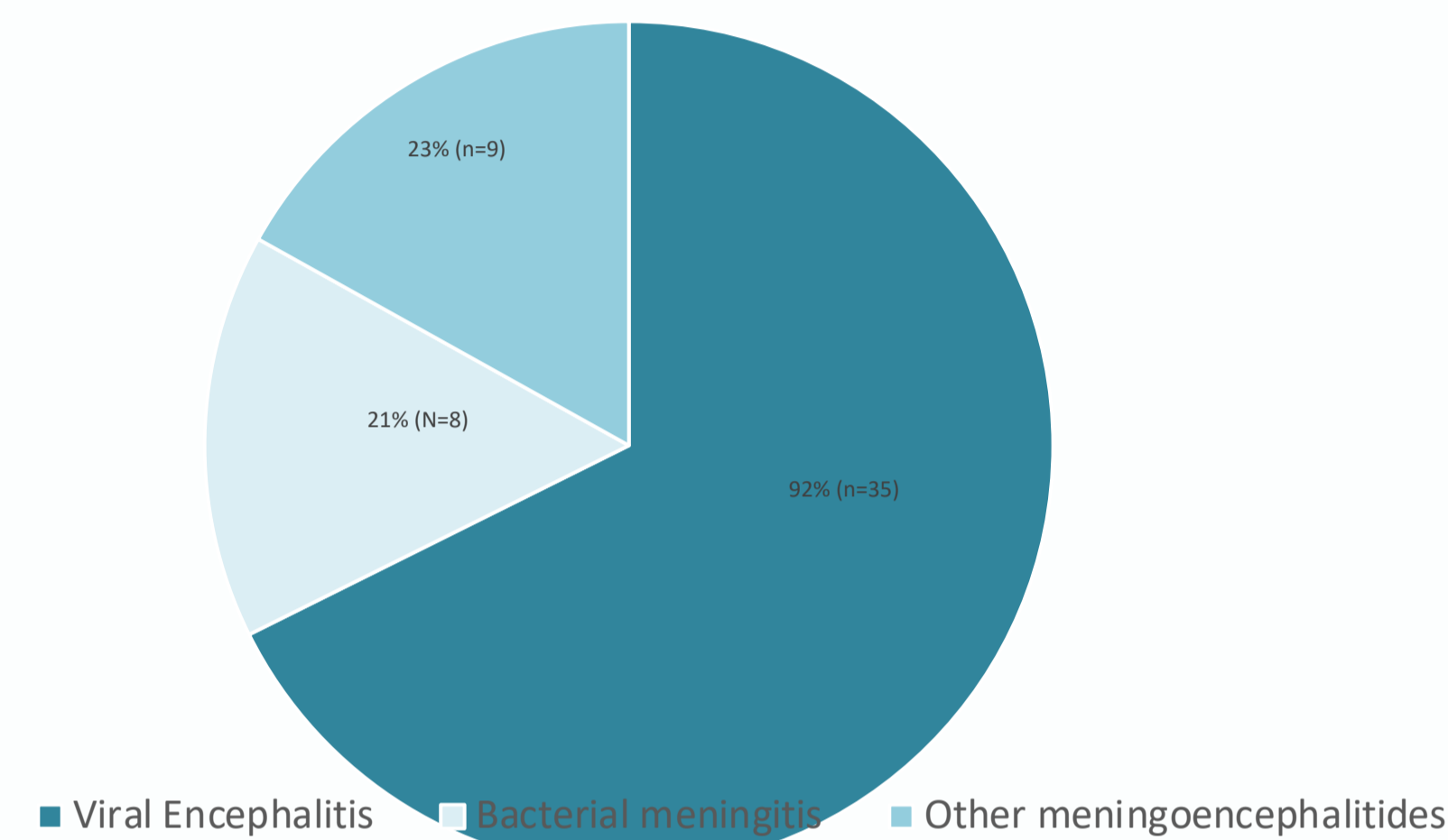
Medical notes, imaging, laboratory results and inpatient prescriptions were reviewed against local guidelines. Data was collected and analyzed on MS excel in line with GDPR. Indications for lumbar puncture, antimicrobial compliance and timelines for all of the above elements were recorded.

3. Results

Thirty eight patients underwent lumbar puncture for suspected meningitis during the study period. Fifty one percent of patients were male. The mean age (SD) at time of presentation was 40 +/-17 years. Eighteen patients (47%) had blood cultures taken on admission. Eighty nine percent of patients (n=34) had neuroimaging performed (94% being CT Brain) and of these,

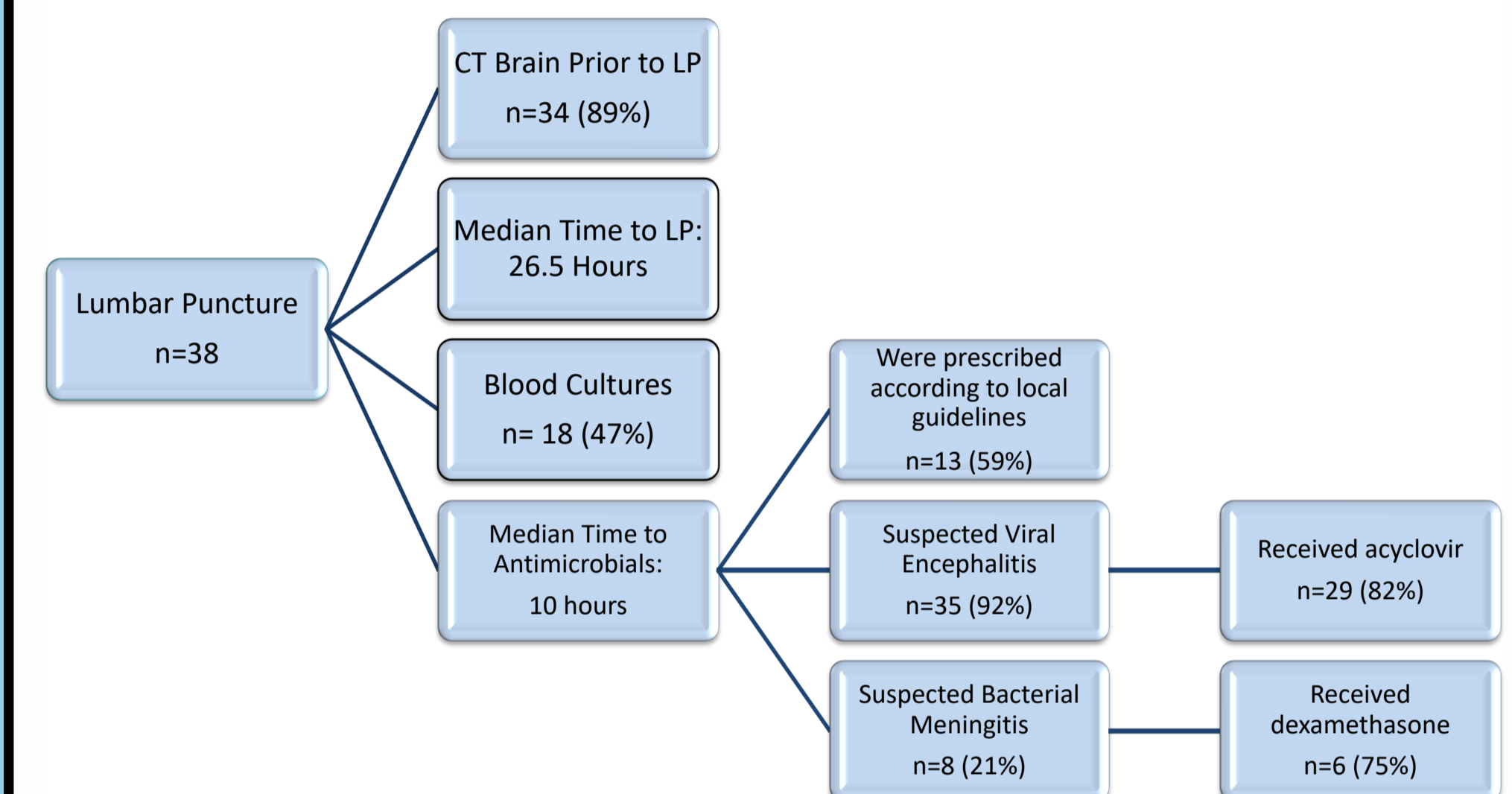
3. Results

Figure 1: Suspected Diagnosis



94% (n=32) were performed prior to lumbar puncture. Abnormal level of consciousness was the most common indication recorded for CT prior to LP. The median time to LP was 26.5 hours [Range 30 minutes to 14 days]. The median time to antimicrobial administration was 10 hours [Range 50 minutes to 14 days]. Three patients (7.89%) received antimicrobials within one hour of suspected diagnosis. Six patients (15.8%) received dexamethasone simultaneously with antimicrobials. Fifty eight percent (n=22) of those who underwent LP had antimicrobials prescribed with 76% being prescribed empiric antivirals. Fifty two percent (n=20) were prescribed antimicrobials and antivirals together. Of those prescribed antimicrobials 59% (n=13) were prescribed according to local guidelines. Of those who had alternate antimicrobials prescribed (41%, n= 9) a diagnosis other than meningitis was considered in 56% (n=6) of cases. Three patients were diagnosed with aseptic meningitis and two patients were diagnosed with viral meningitis. Of the data that was available, at day 10 post admission, 34% (n=13) had been discharged, 34% (n=13) had improved clinically, 5% (n=2) had passed away and 2.5% (n=1) was diagnosed with multiple sclerosis.

Figure 2: Results



4. Discussion

While the audit captured adherence to antimicrobial guidelines, clinical suspicion was hard to capture. In many cases the audit flags gaps in adherence to guidelines although in these cases clinical suspicion of meningitis was low. In future a re-audit incorporating detailed review of clinicians notes and by proxy clinic suspicion, may yield greater accuracy.

5. Conclusion

Adherence to hospital guidelines on the management of suspected meningitis can be improved. Eight percent of patients with suspected meningoencephalitides received antimicrobial treatment within one hour. Interventions will be undertaken to improve adherence to the local guidelines and this audit will be repeated.

References

1. Swartz, M., 2004. *Bacterial Meningitis — A View of the Past 90 Years*. *New England Journal of Medicine*, 351(18), pp.1826-1828.
2. Koster-Rasmussen R, Korshin A, Meyer CN. Antibiotic treatment delay and outcome in acute bacterial meningitis. *J Infect* 2008;57:449-54.
3. S. Mc Nicholas - Management of Meningitis and Encephalitis, Guide Doc St Vincents University Hospital