

Diagnostic Accuracy of Neuro-ophthalmic Conditions seen in an Emergency Eye Department



Authors: Shie Wei Chan, Salim Khan, Lily-Rouhi Parkouhi, Ali Yagan

Background:

- Patients with neuro-ophthalmic conditions present to the emergency eye department on a regular basis.
- Many of them are challenging and there is the potential of misdiagnosis in these cases which may lead to harm¹.
- Aim of the study was to examine the diagnostic accuracy of neuro-ophthalmic conditions referred from an emergency eye department.

Methods:

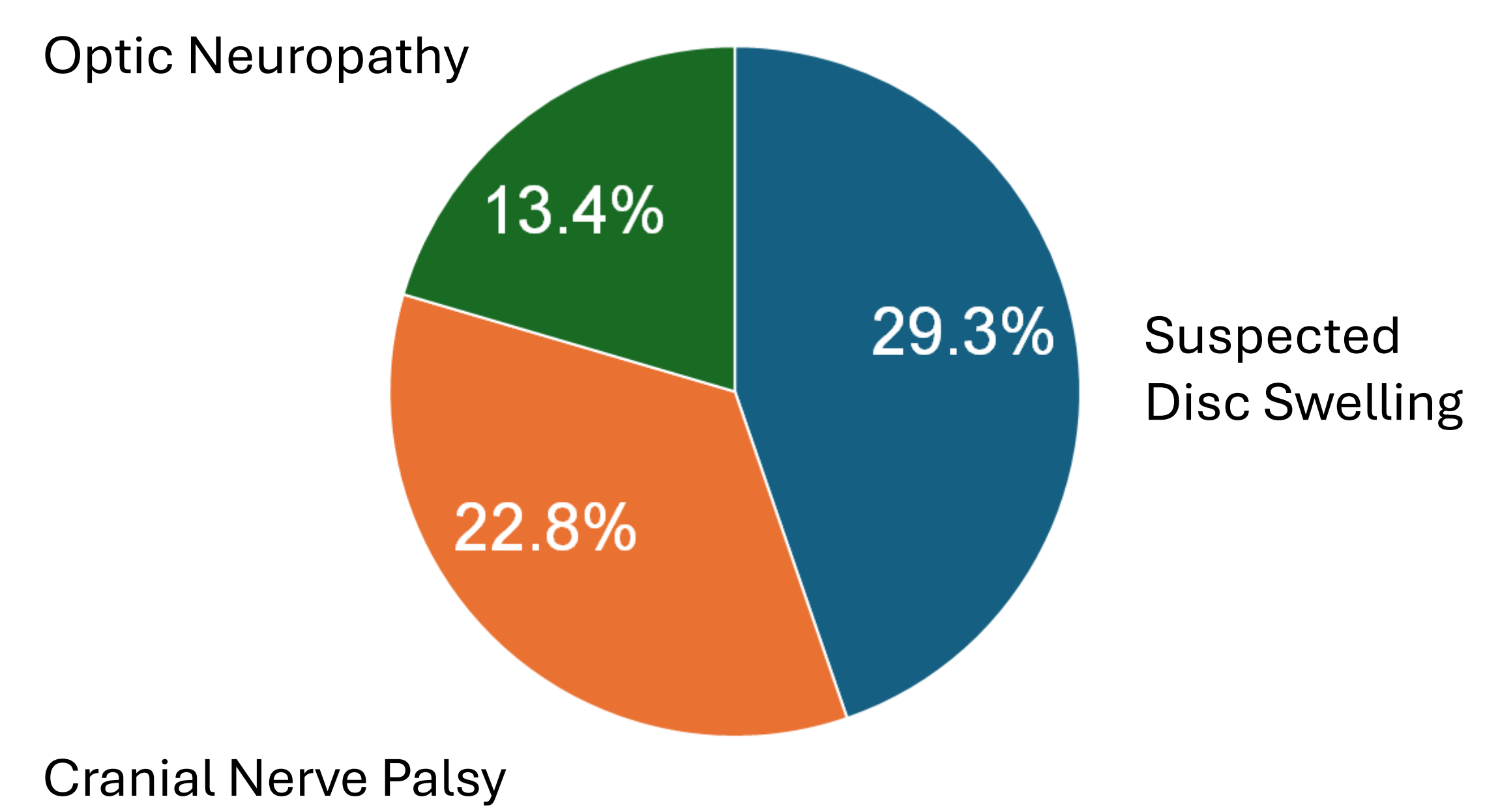
- Retrospective review of EMR of patients seen in an emergency eye department (EED) and referred to the neuro-ophthalmology department between Jan 2024 and Sep 2024.
- Collected data on demographics, conditions referred, urgency of referrals, EED diagnosis and final diagnosis in the neuro-ophthalmic clinic.
- Diagnostic process errors were identified and categorised using the Diagnosis Error Evaluation and Research (DEER) taxonomy tool².

Results:

- **232 referrals** , 148 urgent and 84 routine.
- **23** DEER-coded error cases clustered in
 - Physical examination (65%)
 - Tests (lab/radiology) (35%)
 - History (22%)
 - Assessment/Diag reasoning (13%)
 - Follow-up (4%)
- Most frequent DEER subcategories
 - Misinterpreted or overlooked **exam findings** (10/23)
 - Failure or delay in ordering a **test** (7/23)



- Most errors were single-point failures (15/23)
- 7/23 involved two stages
- 1/23 involved three stages
- Top EED referral themes



- 23.7% were recorded as did not attend/not seen
- 10.8% had resolved or were resolving at neuro-ophthalmology review.

Conclusion:

- Nearly one in ten neuro-ophthalmology referrals from the emergency eye department were associated with diagnostic error.
- Diagnostic process failures most commonly occurred at the level of physical examination and diagnostic testing.
- Suspected optic disc swelling was the most frequent referral diagnosis and was disproportionately represented among misdiagnosed cases
- The majority of errors were attributable to single-point failures
- Targeted interventions focusing on structured assessment of optic nerve and clearer testing pathways may yield meaningful improvements in diagnostic accuracy.

References:

1. Spiegel SJ, Moss HE. Neuro-Ophthalmic Emergencies. *Neurol Clin.* 2021;39(2):631-647. doi:10.1016/j.ncl.2021.01.004
2. Schiff GD, Hasan O, Kim S, et al. Diagnostic Error in Medicine: Analysis of 583 Physician-Reported Errors. *Arch Intern Med.* 2009;169(20):1881-1887. doi:10.1001/archinternmed.2009.333