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Examining Diagnostic Variability Among Pediatric Subspecialists in Case Examples of Infant Head Injury

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Examining Diagnostic Variability Among Pediatric Subspecialists in Case Examples of Infant Head Injury

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Disclosures

- None

Background

- Clinical presentation, imaging, and ophthalmologic findings are important factors in distinguishing between non-abusive and abusive head trauma (AHT) in infants.
- Little is known about diagnostic agreement between pediatric subspecialists regarding infants with head injury.

Objectives

- To examine differences in rates of AHT diagnosis among pediatric subspecialists using case examples of infant head injury.

Methods

Methods-Cases

- Four case examples of infant head injury were developed into an online survey.
- Each case highlighted an area of focus.
 - Case A: Severe retinal hemorrhages (RHs)
 - Case B: Mass effect subdural hemorrhage (SDH)
 - Case C: SDH membrane formation
 - Case D: Sepsis/meningitis

Methods-Cases

- Each case was divided into multiple parts, and each part presented new information about the case.
- After each part, participants were asked:
 - “Are the findings consistent with AHT?” (“Yes”, “No”, “Need more info/don’t know”)
 - “How likely are the findings due to AHT?”
 - “What is the likely timeframe for the trauma?”

Study Population

- Participants were recruited from the following pediatric subspecialties:
 - Child Abuse Pediatrics (CAP)
 - Emergency Medicine (PEM)
 - Critical Care (PCC)
 - Neurosurgery (NS)
 - Hospital Medicine (PHM)
- Participants were eligible if they evaluated at least 1 possible case of AHT during their career.

Data Analysis

- The response selected by most CAPs was the “reference” response.
- This reference response was compared across subspecialties using Chi-square or Fisher’s exact tests.
- A Bonferroni correction was used to determine statistical significance.

Results

Study Population

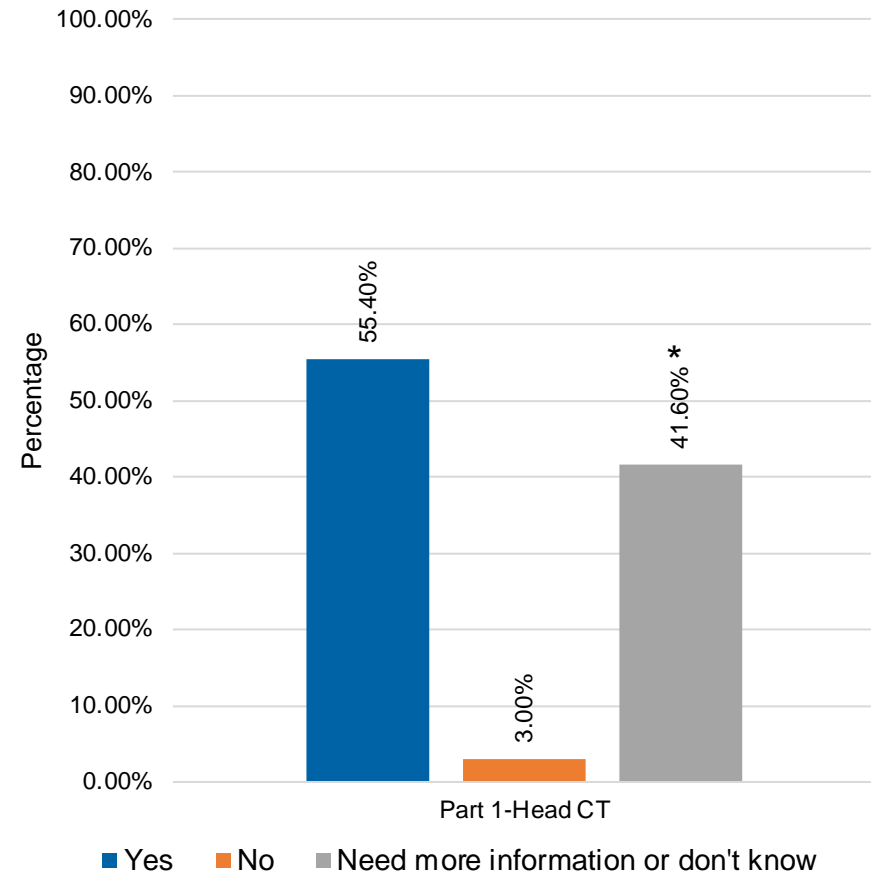
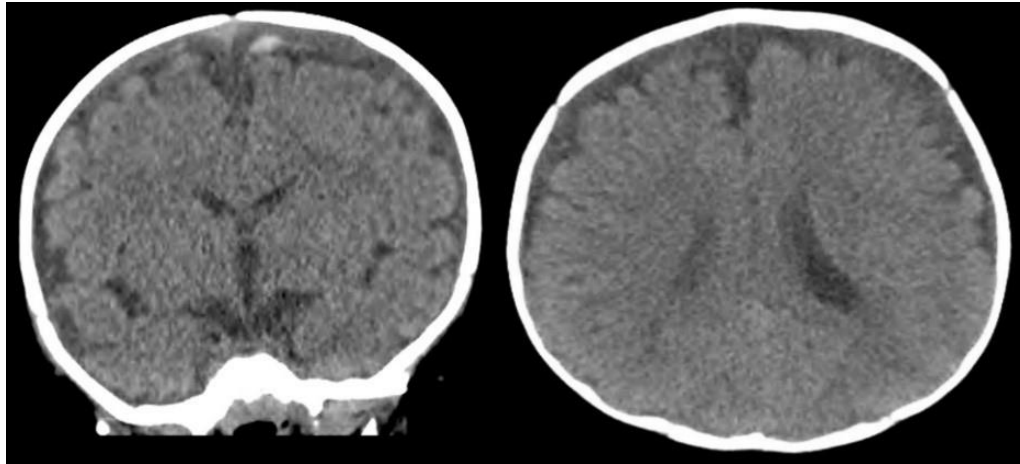
	Overall
N (%)	288 (100)
Age range (years)	
25-44	176 (61.1)
45-64	93 (32.3)
65-84	19 (6.6)
Subspecialty N (%)	
Pediatric Emergency Medicine (PEM)	97 (33.7)
Child Abuse Pediatrics (CAP)	77 (26.7)
Pediatric Hospital Medicine (PHM)	76 (26.4)
Neurosurgery (Neuro)	27 (9.4)
Pediatric Critical Care (PCC)	6 (2.1)
Other	5 (1.7)
Time in Subspecialty N (%)	
1-10 years	157 (54.5)
11-20 years	71 (24.7)
21 or more	60 (20.8)
Number of AHT Cases N (%)	
1-50 cases	159 (55.0)
51-100	49 (17.0)
More than 100	80 (28.0)

Case A: Severe RHs

“Are the findings consistent with AHT?”

- A 7-month-old male infant with seizure activity.

Part 1

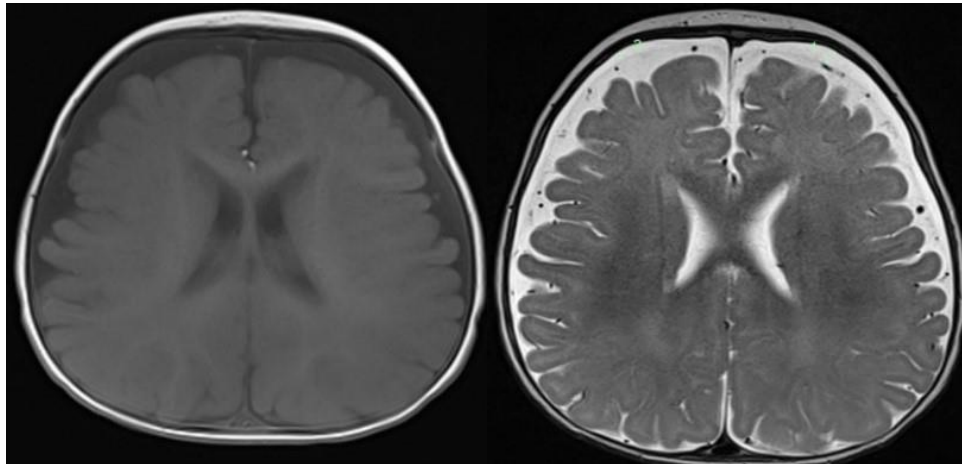


Case A: Severe RHs

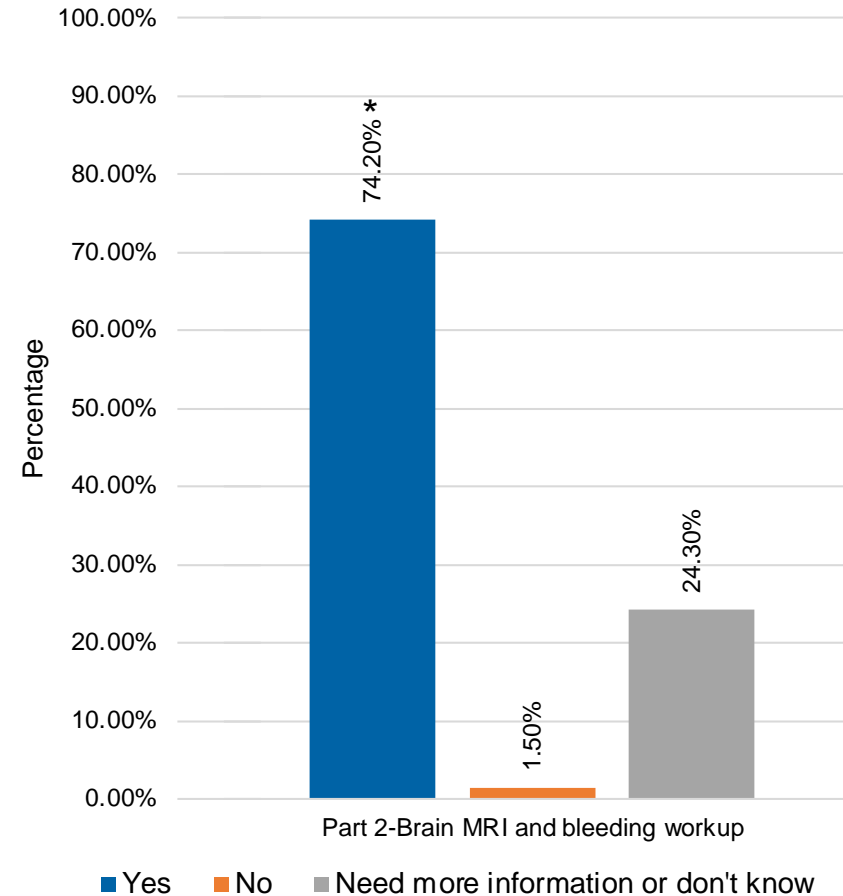
“Are the findings consistent with AHT?”

- A 7-month-old male infant with seizure activity.

Part 2



- Normal bleeding labs



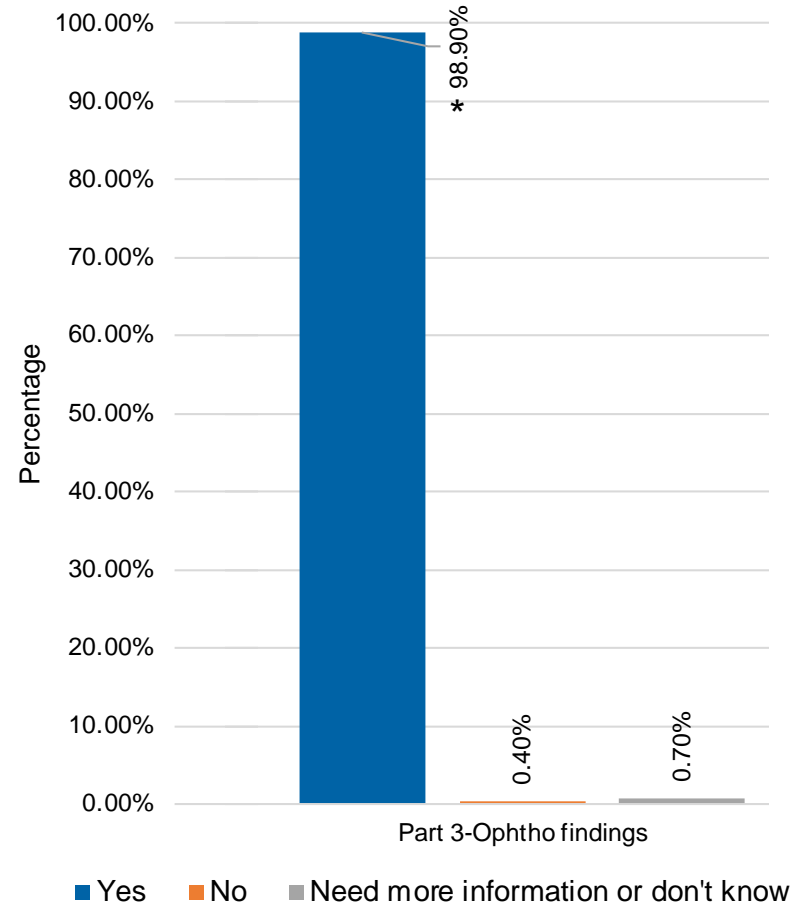
Case A: Severe RHs

“Are the findings consistent with AHT?”

- A 7-month-old male infant with seizure activity.

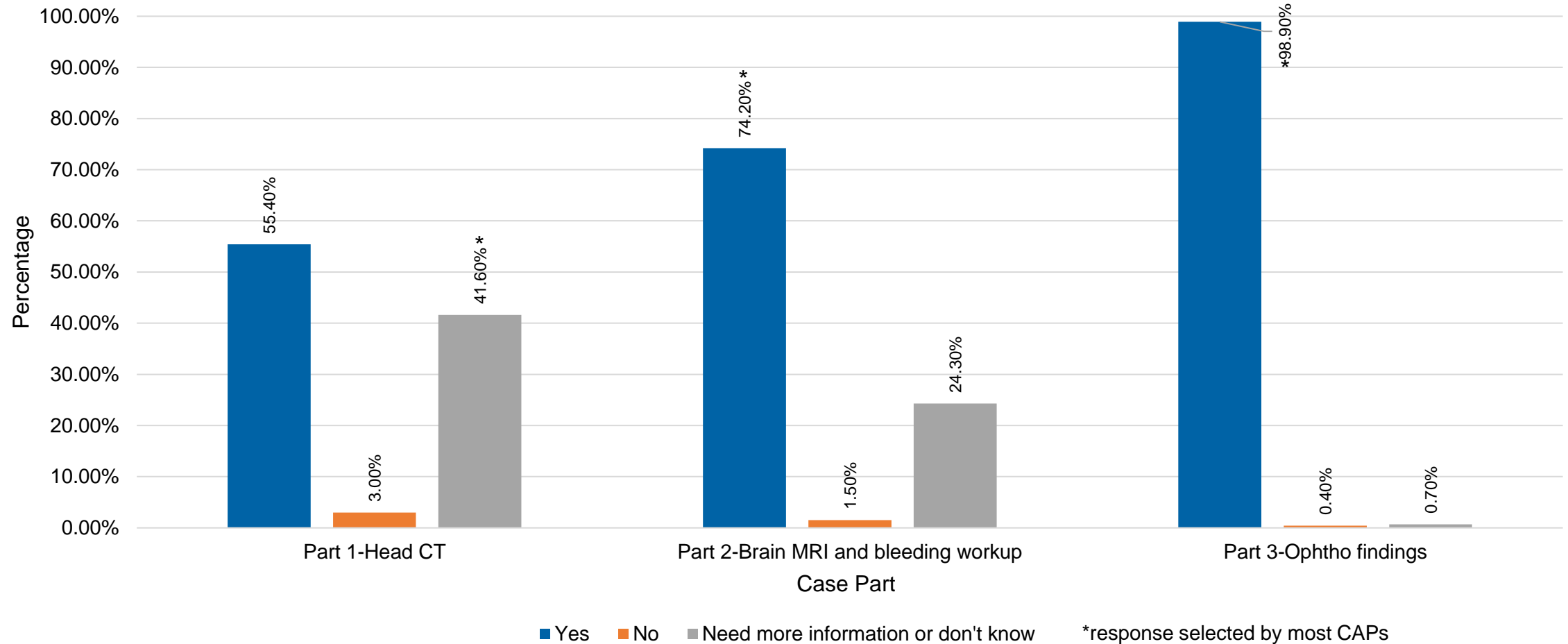
Part 3

“Bilateral multilayered retinal hemorrhages, too numerous to count, from posterior pole to ora serrata. There is no schisis cavity.”



Case A: Severe RHs

“Are the findings consistent with AHT?”



Case A: Severe RHs

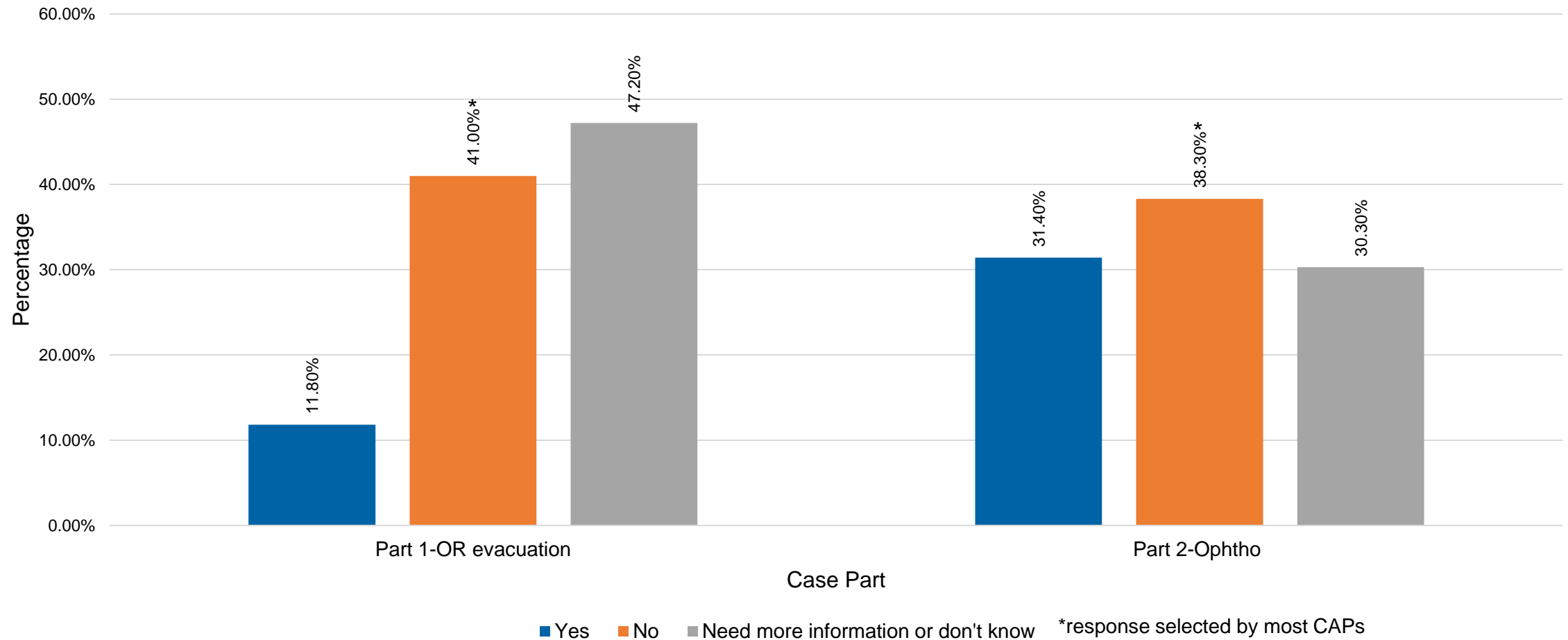
“Are the findings consistent with AHT?”

Response by Subspecialty

Subspecialty	Percent with reference response	p-value
CAP (“Yes”)	100%	Reference
PHM	97.1%	0.2447
PCC	83.3%	0.0779
PEM	100.0%	---
NS	100.0%	---
Other	100.0%	---

Case B: Mass Effect SDH

“Are the findings consistent with AHT?”



Case B: Mass Effect SDH

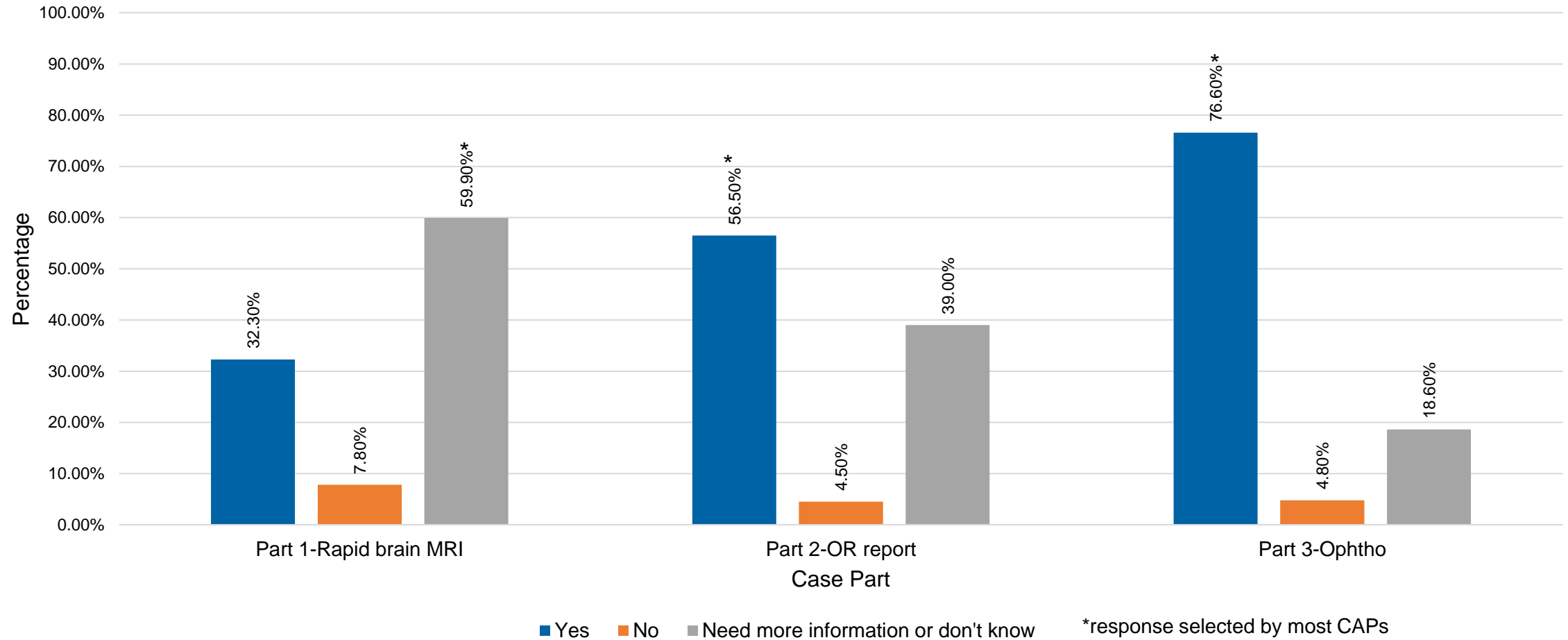
“Are the findings consistent with AHT?”

Response by Subspecialty

Subspecialty	Percent with reference response	p-value
CAP (“No”)	57.9%	Reference
PHM	34.9%	0.0061*
PCC	50.0%	1
PEM	28.0%	<0.0001*
NS	24.0%	0.0033*
Other	40.0%	0.6475

Case C: SDH Membrane Formation

“Are the findings consistent with AHT?”



Case C: SDH Membrane Formation

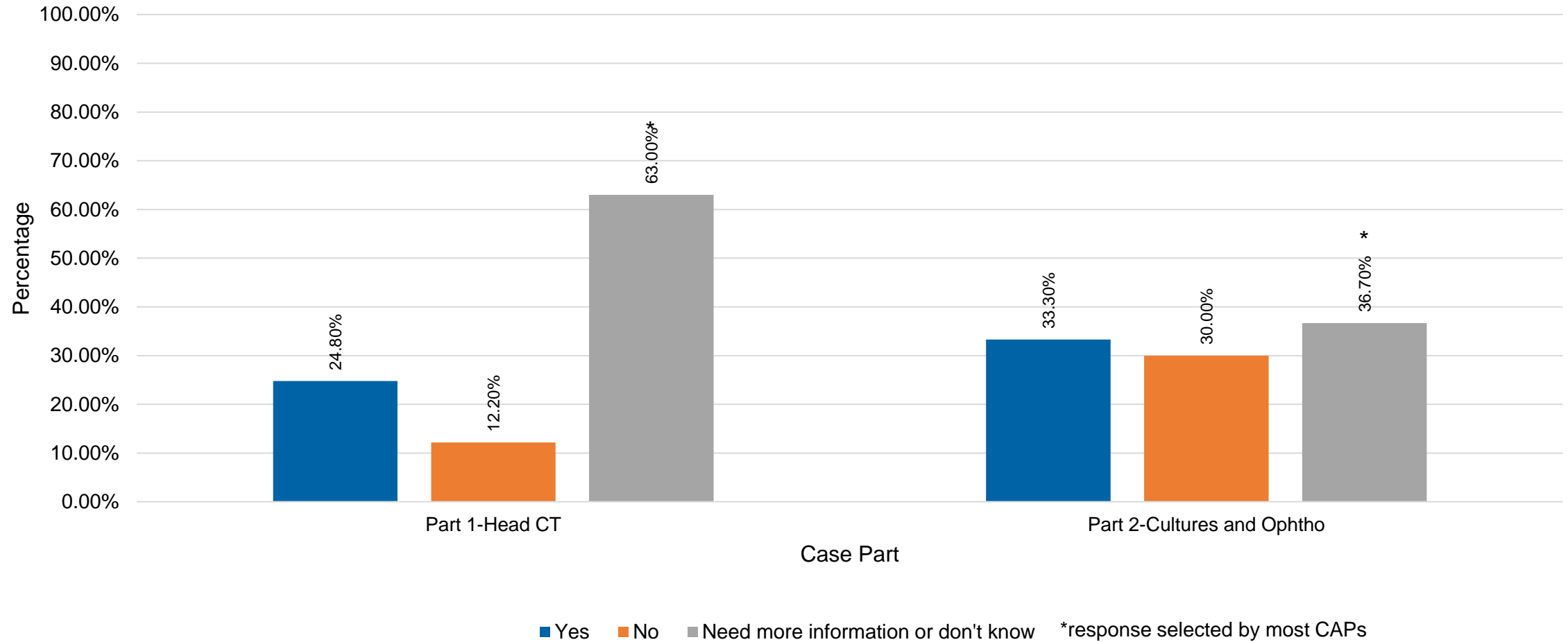
“Are the findings consistent with AHT?”

Response by Subspecialty

Subspecialty	Percent with reference response	p-value
CAP (“Yes”)	55.6%	Reference
PHM	63.8%	0.3205
PCC	33.3%	0.4063
PEM	58.2%	0.7308
NS	34.6%	0.0672
Other	80.0%	0.3848

Case D: Sepsis/Meningitis

“Are the findings consistent with AHT?”



AHT Diagnosis by Subspecialty

Case D: Sepsis/Meningitis

Response by Subspecialty

Subspecialty	Percent with reference response	p-value
CAP ("Need more info/don't know")	39.4%	Reference
PHM	34.3%	0.5262
PCC	50.0%	0.6800
PEM	34.8%	0.5413
NS	42.3%	0.7984
Other	20.0%	0.6437

Limitations

- There was a low response rate across all subspecialties.
- Response rates varied based on recruitment methods used.
- Smaller sample sizes for certain subspecialties made it difficult to calculate statistical significance.

Conclusions

- Diagnostic variability was detected in all cases between subspecialists.
- Clinical presentation remains an essential component in distinguishing between non-abusive and abusive head trauma.
- Further research into medical-decision making regarding infant head injuries is warranted.

Questions?



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