

Understanding Blood-based Biomarker Positivity Rates In Undifferentiated High-risk Geriatric Patients In The Emergency Department.

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Introduction

- Blood-based biomarker (BBM) availability has started to shift how the Alzheimer's Disease and Related Dementias (ADRD) diagnosis is approached within primary care and memory care centers.
- The availability, performance, and positivity of such biomarkers have not been studied in acute care settings, such as the Emergency Department (ED), where many patients with undiagnosed ADRD present with ADRD-related or unrelated presentations.
- It is conceivable that BBM could become available for clinical or research use in an acute care setting in the future.
- In this quality improvement study, we aimed to assess pTau-217 positivity among undifferentiated High-Risk Geriatric Patients (HRGP) in the ED.

Methods

- We chose a random sample of 43 HRGPs who presented to the ED between January 15th and February 15th, 2026, and had blood samples drawn and analyzed for pTau-217 as part of a laboratory QI project.
- To qualify as an HRGP, patients met the following criteria (Table 1). These are well-established criteria in the ED setting and are closely associated with poor patient outcomes.

HRGP Criteria

Aged 65 or older presenting in ED and

- Chief complaint of Fall
- History of dementia (documented in EMR)
- ≥5 ED visits within last year
- 10 home medication
- Delirium (4AT score ≥4)

Table 1: High Risk Geriatric Patients Criteria; 4AT Delirium Screening tool

- The Elecsys Phospho-Tau (217P) Plasma blood-based biomarker test, created by Roche Diagnostics, was performed on the blood sample collected on the day of the index ED encounter.

Methods

- A manual retrospective chart review was done to review the following-
- Clinical presentation at the time of the index ED visit and age.
 - Diagnosis of any form of Dementia in the medical chart on or before the index ED encounter.
 - Documentation of Delirium on the index ED encounter - either by positive delirium screening or documentation of altered Mental Status (AMS) during the hospitalization index ED visit.
 - Presence or absence of any stage of CKD.

Results

The results of this study are displayed in **Figure 1**.

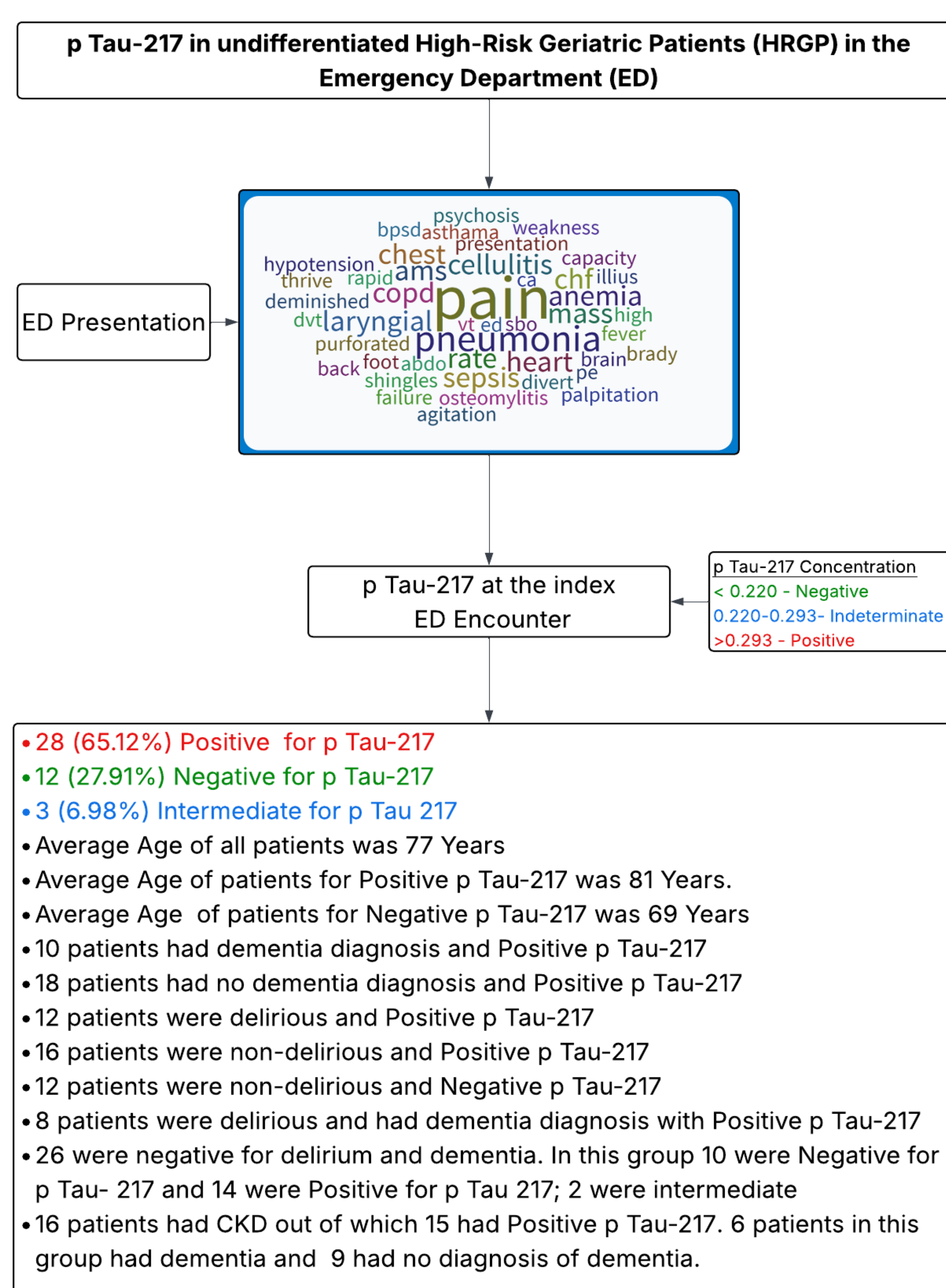


Figure 1

Conclusions

- To our knowledge, this is the first assessment of the BBM (pTau-217) positivity rate among undifferentiated older ED patients.
- Despite the small sample size, we find that patients infrequently present to the ED with cognitive symptoms.
- Older patients had a high likelihood of a positive pTau-217.
- The pTau-217 positivity rate was 65% in such patients.
- A preexisting clinical diagnosis of dementia was almost always associated with pTau-217 positivity, except in one patient.
- Association of Delirium alone was inconsistent with p Tau-217 positivity.
- Delirium on ED presentation and preexisting Dementia combined had a 100% likelihood of a positive p Tau-217.
- High prevalence of CKD in such patients presents an interpretive challenge.
- Larger studies are needed to differentiate Delirium /Dementia and their frequent overlap, and to assess the role of pTau-217 and other BBMs in such scenarios.
- Despite high interest in BBM in the ADRD diagnostic pathway, significant challenges remain in incorporating such highly sensitive BBMs in ADRD diagnostic pathways in acute care settings.

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Scan to learn more about the Alzheimer's Disease Accurate Diagnosis Project.

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