Use of Creatine Kinase Levels in the Detection of Emerging Catatonia: A Single Center 10-year Retrospective Analysis for the Identification of a Pre-Malignant Catatonia Presentation Pattern

• Conrad Stasieluk, MD
  • Loyola University Medical Center
CLP 2023
Disclosure: Conrad Stasieluk, MD

With respect to the following presentation, in the 24 months prior to this declaration there has been no financial relationship of any kind between the party listed above and any ACCME-defined ineligible company which could be considered a conflict of interest.
Diversity, Equity, and Inclusion Statement

Catatonia is a complex condition more commonly seen in people of color, and thus can be subjected to inherent medical bias that delays diagnosis and treatment.

Further guidance on the utility of creatine kinase levels in decreasing the time to diagnosis of catatonia can help provide more determinate criteria for diagnosis and decrease the inclusion of bias in the diagnostic process.
Introduction

- In recent years, Loyola University Medical Center and its Psychiatry Consultation-Liaison team have noticed increasing number of malignant catatonia cases.

- Despite the potential for severe complications and adverse events in untreated catatonia, its status as a neglected and understudied condition has persevered since its first description in 1874.

- Possible considerations for contributory factors to higher number of cases at Loyola include:
  - Geographical location
  - Detrimental mental health effects of a pandemic

- In this context, we evaluated all patients who were treated at the Loyola University Medical Center (LUMC) over the past 10 years for catatonia manifestation with the aim of elucidating a pre-sensitive presentation pattern, common finding, or other granular data point that may have predictive value for catatonia and its diagnosis.
Methods

• The first search led to more than 25,000 patients as catatonia and other diagnoses were included based on ICD-9 and ICD-10 coding.

• We narrowed our search to catatonia patients, and those patients presenting to the Emergency Department with psychosis, mania, delirium, and who later received the diagnosis of catatonia.

• We placed emphasis on patients with data on CK at admission/ER, during 1st week, and at any other point during admission.

• Charts were individually reviewed, along with billing codes, to determine diagnosis time.
Results

• Of the 181 patients with catatonia, 119 patients (65.7%) were found to have elevated CK levels during their admission.

• In the 62 patients in whom CK levels were not elevated, the average time to diagnosis after admission was 5.5 days, whereas in the 119 patients in whom CK levels were elevated the time to diagnosis was 1.8 days (p<0.001).

• Nonlinear regression of pooled inter-sample percent change of CK levels generated a model with moderate correlation ($R^2=0.542$). Analysis using least squares for appropriateness of fit via runs test suggested no significant deviation from the model (p= 0.3614).
Final Thoughts

• Our results indicate a role for CK level detection in the early suspicion of catatonia as we observed a clear trend of delayed catatonia diagnosis when CK levels were not elevated, improving diagnostic capability and time to treatment.

• More specifically, CK levels can be used as an objective measure to aid in the diagnostic process in hopes of further limiting any influence of biases in medical practice, as patients with catatonia are more likely to be younger and of Black ethnicity.

• It is important to note, however, that patients with normal CK levels may have exhibited an atypical earlier presentation of catatonia which delayed diagnosis. This serves as a limitation of this study as patient data was collected based off ICD codes, and patients with catatonia were not further stratified.

• Diagnosis date determined by chart review of catatonia diagnosis, did not account for ‘r/o catatonia’.

• Complete analysis is pending for further analysis of CK level trends and other possible objective data for pre-catatonia presentations, as this is an ongoing work in-progress.
Acknowledgements

A very special acknowledgement to the team:

- Mark Jaradeh, MD
- Brian N. Muir, MD
- Edgar Yap, MD
- Esther Belogolovsky, MD
- Edwin Meresh, MD, MPH, FACLP

THANK YOU
References


3. Mark Jaradeh, Mark deBettencourt, Edgar Yap, Yesha Patel, April Alcantara, Conrad Stasieluk, MD, Edwin S. Meresh, MD, FACLCP. Use of Measuring Creatinine Kinase in Detection of Emerging Catatonia: Literature Review and Case Series Report, Loyola University Medical Center, Department of Psychiatry, OBM Neurobiology 2022, Volume 6, Issue 2
