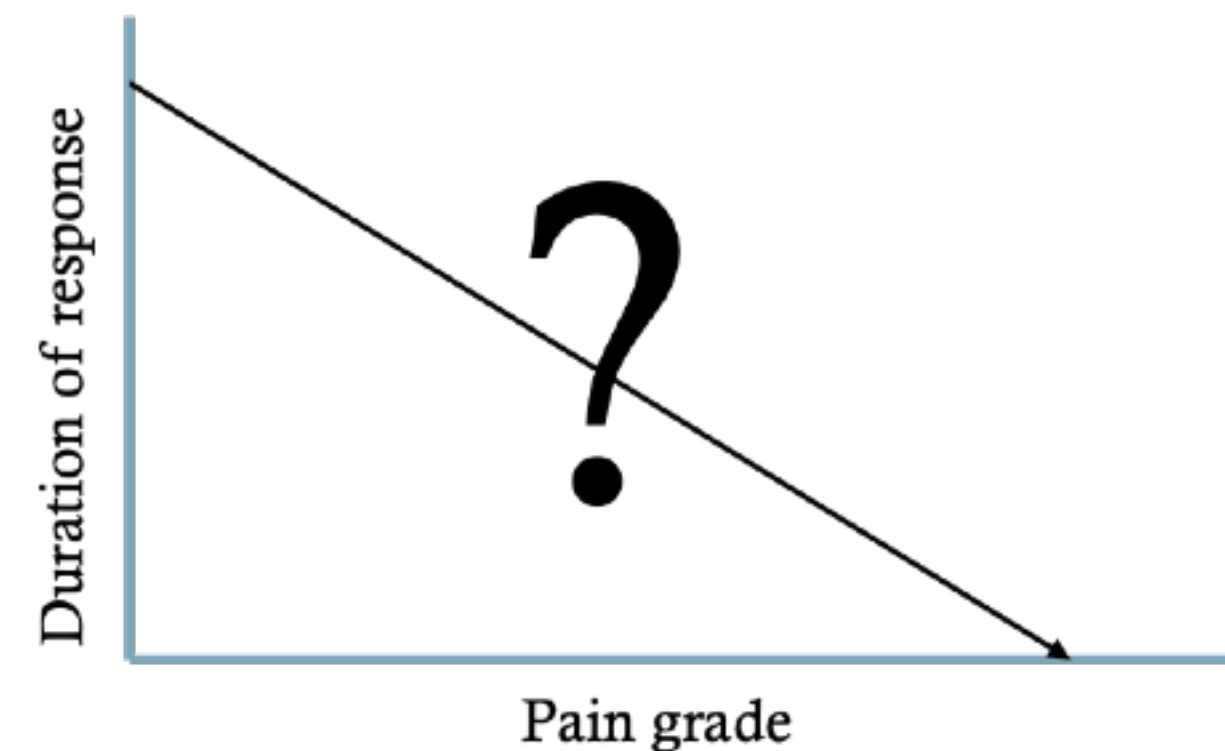


# Machine-learning defines and characterizes the grades of trigeminal neuralgia

Work in progress

**Project goal:** to apply ML on brain imaging and clinical data to propose a novel grading system for TN pain based on patients' duration of surgical response.



**Hypothesis:** TN is characterized by a continuous spectrum of severity, with specific characteristics of pain, sensory functions, and surgical response.



# Clinical data

Work in progress

Independent data variables			
Pain Characteristics	Neurological (CN V) Function	Medical History	Surgical Response
Side Distribution Duration Triggers Description Attack frequency Medication effect Barrow Neurological Institute (BNI) pain score	Facial muscles Lacrimation Corneal reflex Numbness	Comorbidities Previous surgical procedures	Pain status Medication status Pain recurrence

One hot encoding and z-score normalization were used to transform clinical data

Inclusion Criteria	Exclusion Criteria
Classical TN patients treated with GK, MVD, or rhizotomy	Surgically untreated TN, MS-TN, SPL-TN, TN secondary to tumor/nerve injury/infection, bilateral TN, other neurological condition (Alzheimer’s disease, brain tumors, etc.), history of rhizotomy.