Associations of transcranial echocardiographic features with cardiomembolism stroke among patients without atrial fibrillation
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OBJECTIVES/SPECIFIC AIMS: To identify cardiac structural and function parameters, obtained on usual stroke-care TTE evaluation, associated with cardiomebolic stroke (CE) in patients without AF. Hypothesis—left atrial (LA) size and valvular dysfunction will be strongly associated with incident CE. METHODS/STUDY POPULATION: Inclusion criteria: July 1, 2013 to July 1, 2015 admission with imagingConfirmed ischemic stroke, no AF, TTE within 1st 7 days. TTE structure/function parameters were recorded. Stroke subtype (CE vs. other) defined using TOAST criteria, blinded to TTE. New AF definition: AF on ECG, telemetry or event monitor. CE: AF > 48 h. Regression models testing associations with TTE parameters (adjusting for demographics/vascular risk factors). RESULTS/ANTICIPATED RESULTS: Participants (n = 332) were > 60 years hypertensive black males with moderate NIHSS and normal ejection fraction. In adjusted models, odds of CE increased with increasing LA systolic diameter (per 0.1 cm), mitral E point velocity (cm/s), mitral valve dysfunction, wall motion abnormality. New AF also associated with increasing LA systolic diameter. DISCUSSION/SIGNIFICANCE OF IMPACT: These findings may suggest cardiac structural changes independent of AF that are on the CE causal pathway. Understanding the relationship between such TTE parameters and stroke subtype would impact clinical practice, as such TTE data is underutilized when considering stroke mechanism and management.

Augmenting perception through direct electrical stimulation of adult somatosensory cortex
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OBJECTIVES/SPECIFIC AIMS: Our main objectives are to study sensory encoding in the adult cortex and quantify rodents ability to use intraocular microstimulation to guide behavior. METHODS/STUDY POPULATION: Three rats were implanted with unilateral bipolar stimulating electrodes. The electrodes were connected to a wireless neural stimulator housed in the rats' backpack. The rats' swim path was tracked by a video camera above the circular pool, and stimulation parameters were updated in real-time based on distance from the platform. Stimulation was delivered as the distance from the platform increased. Stimulation intensity was determined by threshold testing, and parameters ranged from 15-75 μA with 100-Hz pulse trains and 0.2-ms pulses. Rats were first challenged with the 4-platform task in which the submerged platform was randomized across 4 possible locations. This dissociated visual cues from the platform location, as rats had knowledge of the 4 possible locations, but had to use stimulation to guide them efficiently. Next, rats were tasked with the more challenging random-platform task. Visual cues were completely dissociated from the platform location by randomizing the platform location across the entire pool. Performance using the neuroprosthetic device was assessed by comparing trials when the device was on (stimulation trial) Versus off (no-stim trial) for the 2 tasks. RESULTS/ANTICIPATED RESULTS: For Q1, we asked corresponding authors to indicate the number of disciplines involved in their research and then to choose the definition that best described their research. Among 76 respondents, 42 indicated that their research consisted of 1 discipline, and 34 indicated that their research consisted of more than 1 discipline. Of the 42 respondents who indicated that their research consisted of 1 discipline, 21 (50%) respondents described their research as "unidisciplinary," and 21 (50%) described their research as "interdisciplinary." However, of the 34 respondents who indicated that their research consisted of more than 1 discipline, 16 (47%) described their research as "unidisciplinary," 16 (47%) described their research as "interdisciplinary," and 2 (6%) described their research as "interdisciplinary." For Q2, we assigned a discipline to each co-author based on his/her affiliation and counted the number of disciplines involved. Among 76 respondents, of the 22 who described their research as "unidisciplinary," 16 (73%) were categorized as "unidisciplinary" and 6 (27%) were categorized as "interdisciplinary," using this method. Of the 54 respondents who described their research as "interdisciplinary," 18 (33%) were categorized as "interdisciplinary," and 36 (67%) were categorized as "interdisciplinary." DISCUSSION/SIGNIFICANCE OF IMPACT: Our results highlight that different methods for determining whether a given research article is interdisciplinary are likely to yield different results. Even when researchers indicate that their research is based within one major discipline, they may still consider it interdisciplinary. Likewise, classifying an article as either unidisciplinary or interdisciplinary based on the affiliations of its co-authors, may not be consistent with the way it is viewed by its authors. It is important to acknowledge that assessing the interdisciplinary nature of research is complex and that objective and subjective views may differ.

Beyond diagnosis: Using ultrasound to affect tumor vasculature for hepatocellular carcinoma (HCC) therapy
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OBJECTIVES/SPECIFIC AIMS: Preliminary animal studies showed that low-intensity ultrasound (US) coincident with intravenously administered microbubbles locally disrupts tumor vasculature. This study translates the novel therapy of antivascular ultrasound (AVUS) into an autochthonous model of hepatocellular carcinoma (HCC). The differential effects produced by AVUS at low and high doses are evaluated. METHODS/STUDY POPULATION: HCC was induced in 12 Wistar rats by injection of 0.1% dimethyl bilestrene in drinking water for 12 weeks. Rats received AVUS treatment at low and high doses. Low dose group (n = 6) received 1 W/cm^2 US for 1 minute with 0.2 mL microbubbles injected IV.