

Ultrasound Evaluation of Inflammation Size Difference of Nerves in Occipital Neuralgia: A Literature Review

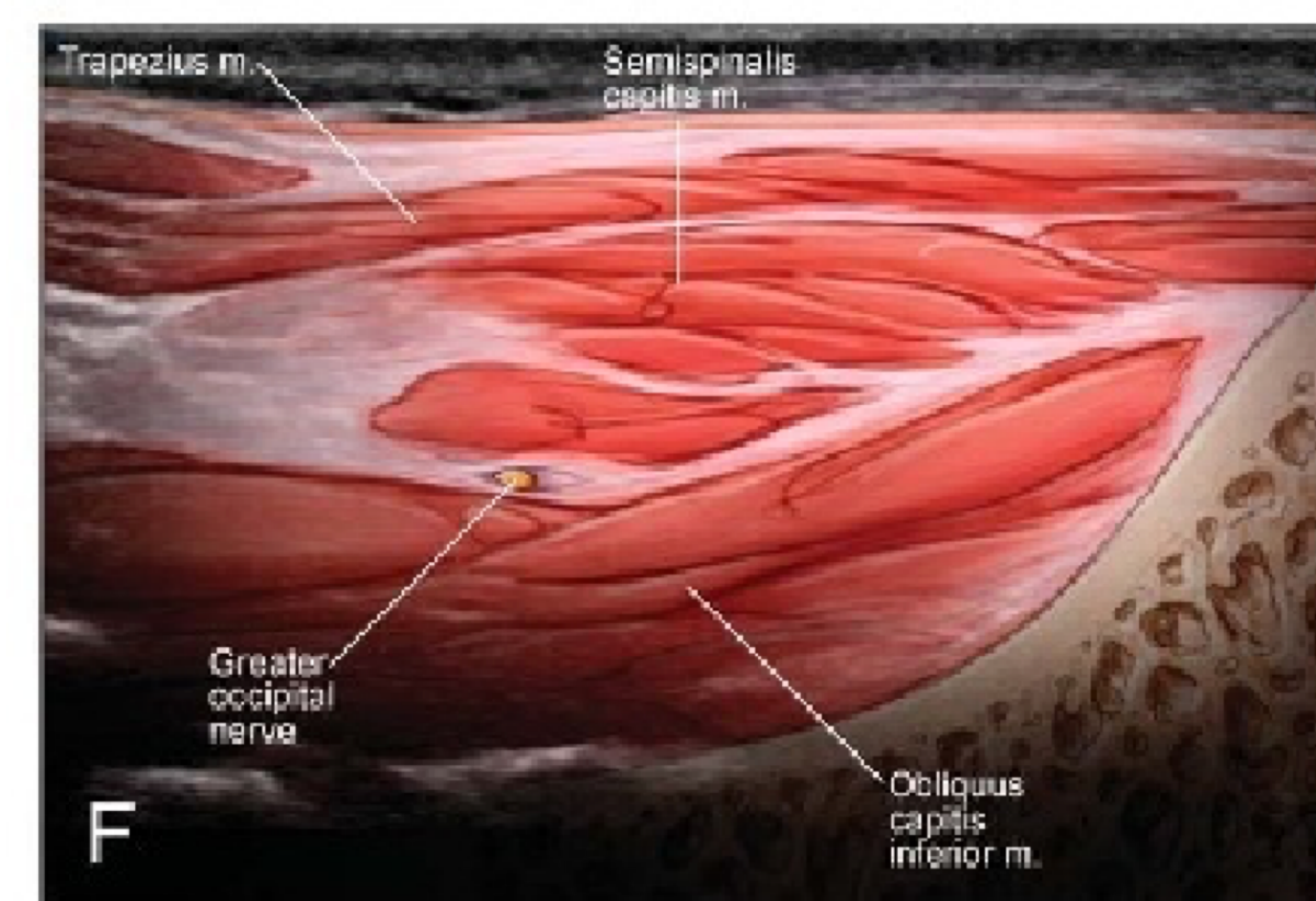
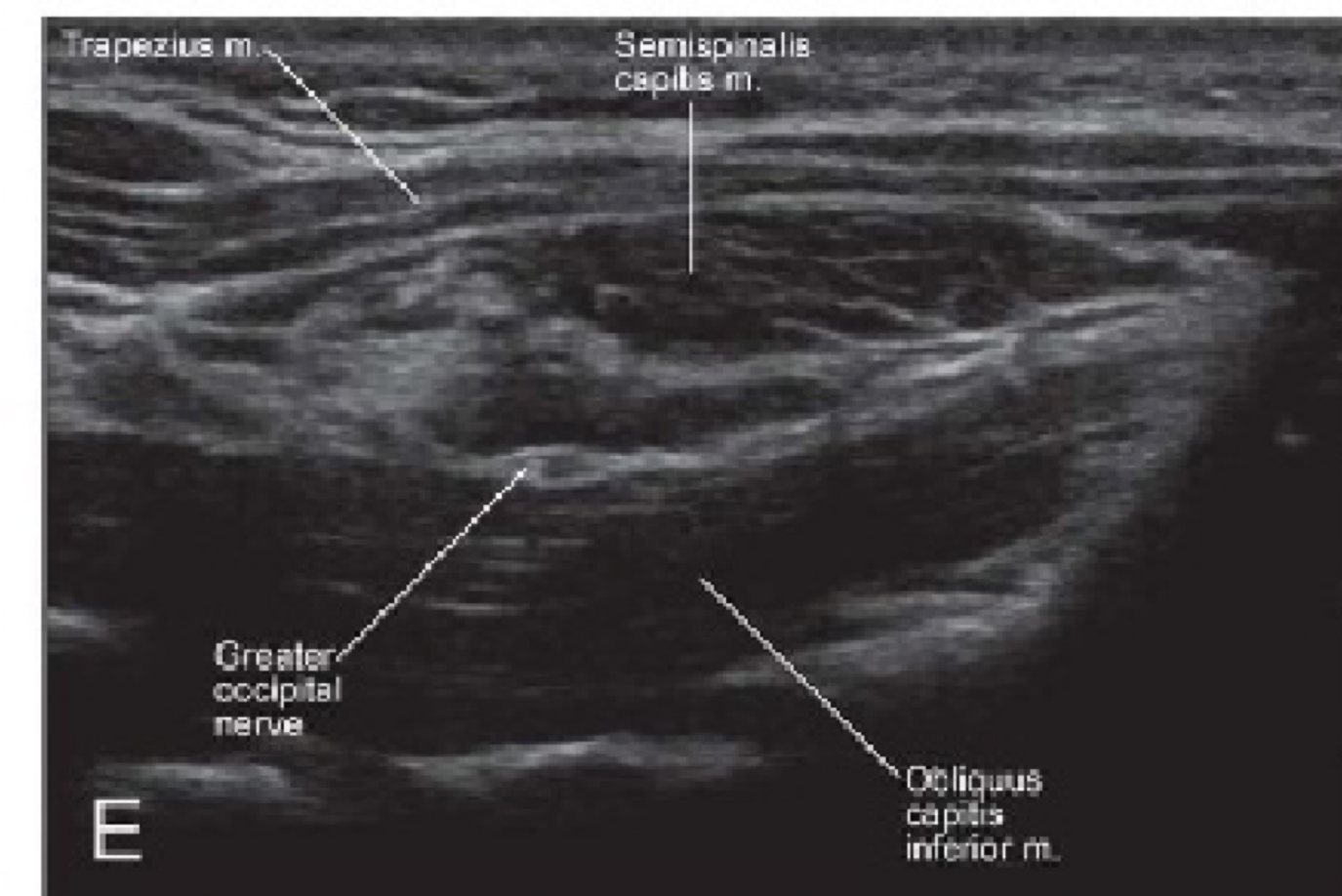
Kiana Moussavi, BA¹, Elham Azizi, MD¹, Nicole A. Boggio, BA², Yashar Eshraghi, MD³, Jose Posas, MD¹.
¹Neurology, Ochsner Medical Center, ²Neurology, Tulane University, ³Anesthesiology and Critical Care Medicine,
Ochsner Medical Center.

Introduction

Occipital Neuralgia is described as shooting or stabbing pain in the posterior aspect of the scalp, which can be bilateral or unilateral. It is often accompanied by tenderness over the occipital nerve distribution but it can also manifest as loss of sensation in the affected area. Many different mechanisms have been postulated as the cause of occipital neuralgia such as nerve root damage, post-surgical damage, irritation, as well as vascular compression by the occipital artery.

However, there is a major gap in current literature focusing on successful treatment and prevention options for such a painful and debilitating disease. What separates Occipital Neuralgia from other causes of headache is the ability to directly visualize the causative source using imaging modalities. High resolution ultrasound techniques may be the solution we have been looking for in directly visualizing the occipital nerve and providing information on both etiology, progression and response to management of occipital neuralgia.

Regional Anatomy



The regional anatomy of the Occipital nerve allows us to visualize the nerve using ultrasound guided technology. In order to accurately visualize the Occipital nerve, the ultrasound probe is placed over the occipital protuberance and moved inferiorly until the C2 spinous process is reached. The probe is then moved laterally until the obliquus capitis inferior muscle is visualized. Proper positioning at this point allows for visualization of the greater occipital nerve deep to the semispinalis capitis and trapezius muscle and superficial to the obliquus capitis inferior muscle.

Literature Review

Current literature focuses on the pathophysiology of occipital neuralgia, with most studies indicating occipital nerve entrapment by the posterior neck and scalp muscles as the most likely etiology. Of such studies, several looked at the use of ultrasound to compare the cross-sectional area of occipital nerve to the adjacent obliquus capitis inferior muscle as a way of confirming nerve entrapment as the most likely etiology. Some studies also looked at effective treatment options for occipital neuralgia. However, the limiting factor for all studies was small sample size.

Conclusions

Occipital Neuralgia is a debilitating disease and remains a mystery in its exact etiology and successful treatment. We believe that based on the current available data, the use of greater sample sizes in conjugation with high-resolution ultrasound to compare occipital nerve diameter as a measure of inflammation may be a promising technique in providing a possible etiology for occipital neuralgia and help in diagnosis and monitoring of disease progression as well as treatment response. The use of such technology makes it possible for us to actually “see” the headache and therefore provide tailored and more successful management options.

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