Case 10278

Sigmoid sinus diverticulum
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Section: Neuroradiology
Area of Interest: Ear / Nose / Throat Head and neck
Procedure: Diagnostic procedure
Technique: CT
Special Focus: Congenital Inflammation Case Type:
Clinical Cases
Authors: Macdonald K, Farboud A, Favill E
Patient: 45 years, female

Clinical History:

The patient presented with symptoms and signs suggestive of a left sided cholesteatoma. Non contrast CT examination was requested to evaluate anatomy prior to a proposed left sided radical mastoidectomy.

Imaging Findings:

Non contrast CT examination of the internal auditory meati demonstrated previous right sided mastoid surgery (Fig. 1). On the left side, there is considerable bony sclerosis and complete infilling of all the mastoid air cells by soft tissue/fluid density material. There is evidence of ossicular dislocation. Laterally, some of the aerated mastoid is in continuation with the posterior cranial fossa with a possible breech in the cranial vault at this location (Fig. 2,3).

Contrast enhanced CT examination carried out for further characterisation of the possible breech in the cranial vault revealed an intact temporal periosteum over a highly lateralised and protruding sigmoid sinus. This represented a diverticulum of the sigmoid sinus extending into the mastoid portion of the temporal bone (Fig. 3,4).
Discussion:

Sigmoid sinus diverticuli are rare variations usually picked up inconsequentially on intracranial imaging. They represent an outpouching of the sinus, most commonly, into the mastoid portion of the temporal bone [1].

From a clinical point of view these are important for the radiologist to highlight. Due to the abnormal position of the diverticuli in the mastoid, there is increased risk of laceration during mastoidectomy [2].

Interestingly, there have been recent publications suggesting a link between pulsatile tinnitus and sigmoid sinus diverticuli. In the studies reviewed, obliteration of the diverticulum resulted in symptom resolution with the authors subsequently advocating thorough radiological investigation of all patients with pulsatile tinnitus [3, 4].

The diagnosis of sigmoid sinus diverticuli can be made using contrast enhanced CT examination. For further characterisation, angiography can be carried out and this is usually required prior and following obliteration of the sinus diverticulum.

CT examination of the internal auditory meati is necessary before mastoidectomy to minimise complications associated with aberrant anatomy.

**Differential Diagnosis List:** Sigmoid sinus diverticulum, Bulging sigmoid sinus, Dehiscent jugular bulb, Sinus pericranii

**Final Diagnosis:** Sigmoid sinus diverticulum

**References:**

Eisenman DJ (2011) Sinus wall reconstruction for sigmoid sinus diverticulum and dehiscence: a standardized surgical procedure for a range of radiographic findings. Otol Neurotol32(7):1116-9

http://www.radiologyassistant.nl/en/49c62abe0880e#p49c69c065e6f5


Figure 1

Description: Unenhanced CT of internal auditory meati demonstrating previous right sided mastoid surgery and left sided cholesteatoma. Origin: Department of radiology, Glan Clwyd Hospital, Bodelwyddan, Wales
Description: Unenhanced CT of internal auditory meati demonstrating continuation of the aerated mastoid with the posterior cranial fossa on the left. Possible breach in the cranial vault at this location.

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Origin: Department of radiology, Glan Clwyd Hospital, Bodelwyddan, Wales
Description: Enhanced CT of the internal auditory meati demonstrating a left sided sigmoid sinus diverticulum with no breach in the cranial vault. Origin: Department of radiology, Glan Clwyd Hospital, Bodelwddan, Wales
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