Incidental findings of the skull base on CT brain: Cross-sectional study of a local tertiary referral centre

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Introduction

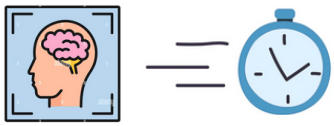
- **CT brain** is the most commonly performed cross sectional modality (>40,000 scans per year in our institution).
- Incidental findings of the skull base are commonly reported as standard practice.
- **Limited data is available** regarding incidence and significance of incidental findings, particularly in our locality.

Objective

- To ascertain the **incidence and burden** of these incidental findings at our locality.
- To evaluate on the **significance of the incidental findings**, which would be important for setting ground for future guidance.

Methodology

- Retrospective cross-sectional study on incidental findings of the skull base region.
- Inclusion:



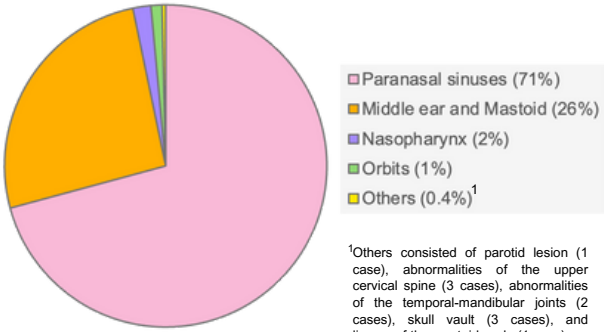
All reports of CT brain within Jan-July, 2017.

- Exclusion: studies dedicated for skull base region.
- Outcome: Incidence of
  1. Presence of incidental findings.
  2. These patients reviewed by relevant specialists (within 1 year after scanning) and any additional investigations or treatment required.

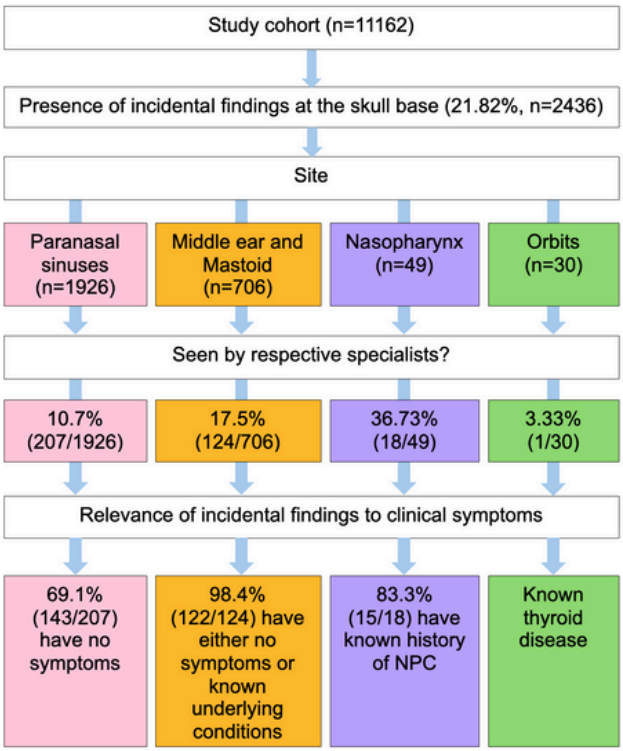
Results

- **A total of 11162 studies**
- ≥1 incidental findings reported in **21.82%** of patients (n=2436).
- **Small proportion** of patients were seen by relative specialists (10.7-17.6%).

Incidental findings of the skull base region



[1]Others consisted of parotid lesion (1 case), abnormalities of the upper cervical spine (3 cases), abnormalities of the temporal-mandibular joints (2 cases), skull vault (3 cases), and lipoma of the mastoid scalp (1 case).

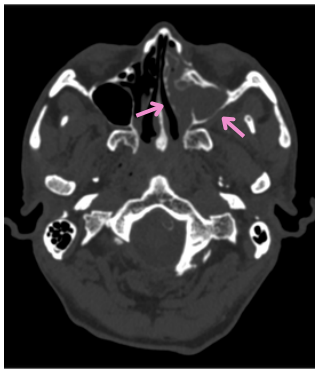


Incidental finding deemed clinically insignificant.

CT brain showed **incidental mucosal thickening** of the **left maxillary sinus** (arrows). Patient was referred to otorhinolaryngologists for this incidental finding but was asymptomatic.

Incidental findings with accountable symptoms and conditions.

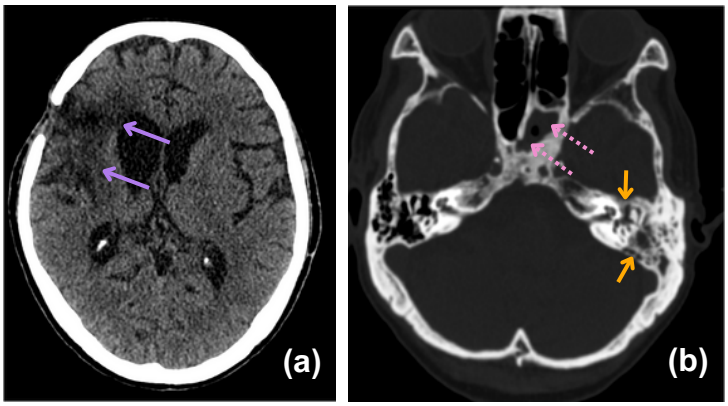
- Patient attended accidental and emergency department for left-sided headache, CT brain performed and showed **opacification of the left maxillary sinus and nasal cavity** (arrows).
- Patient was subsequently seen by ENT surgeon and was diagnosed to have acute sinusitis.



Incidental findings related to underlying Nasopharyngeal carcinoma (NPC).

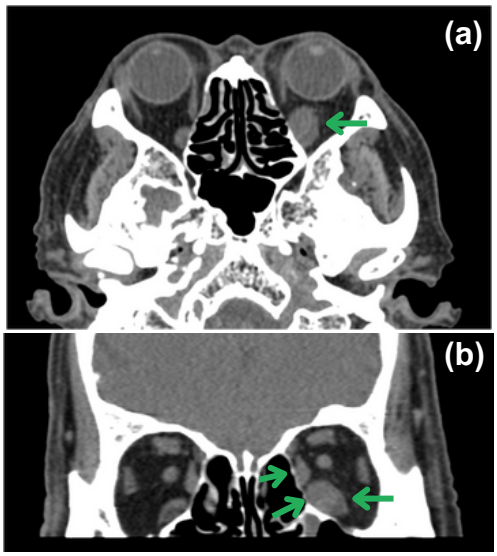
(a) CT brain performed for follow-up of right frontal abscess after surgical drainage with **encephalomalacia** at the surgical bed (arrows),

(b) incidental finding of **right otomastoid effusion** (solid arrows), changes of osteoradionecrosis in the skull base with **mucosal inflammation** in the **left sphenoid sinus** (dashed arrows) which are likely unrelated to clinical presentation.

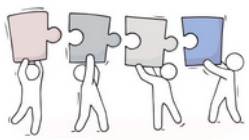


Incidental findings of the orbit.

- Axial (a) and Coronal (b) images of CT brain performed for patient with right-sided visual blurring demonstrated **thickening of the left inferior and medial recti** (arrows).
- Patient had known thyroid associated orbitopathy with predominant left-sided involvement followed up by ophthalmologists.



Conclusion



- **Wide spectrum of incidental findings is present at the skull base, in approximately 1 in 5 CT brain examinations.**
- Most of these findings carries **limited clinical significance** with limited clinical symptoms, or are related to known underlying medical conditions.
- There is need of future guidance on management of these incidental findings.
- Better patient care could be provided with **more efficient utilization of imaging resources**, through minimizing unnecessary further investigations by proper correlation with clinical history and symptoms.