Incidental findings on brain and spine imaging

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We are often asked in Neurology about incidental findings on brain imaging – both MRI and CT. These are typically found when the person has been scanned for another reason, for example headache or hearing loss. To help advise primary care and the public, this factsheet gives some information about how common these are in the normal population and when we may need to see patients with them. Refs[1][2]

Finding	Prevalence in Population	Estimated Number of People in UK	When to Leave It	When to Refer	Who to refer to if indicated
Pineal Cyst	2.5–4.9%	1.5–3.5 million	Stable, <10 mm, asymptomatic	If >10 mm, atypical appearance, hydrocephalus or brainstem symptoms or signs	**NEUROSURGERY**
Empty Sella	~11%	7.5 million	No papilloedema - review at local optometrist if unsure No endocrine symptoms.	If papilloedema (confirmed by local optometrist) and no other clinical features	**OPHTHALMOLOGY**
				If pituitary dysfunction suspected, consider pituitary function testing	**ENDOCRINOLOGY.**
Chiari Malformation Type I	0.5–3.5% (depending on how defined)	300,000–2.5 million	Asymptomatic, no syrinx, no neurological symptoms. <3mm normal.	If brainstem symptoms or signs, syrinx, or obstructive hydrocephalus . >10mm descent is more associated with symptoms. Cough headache (ask for advice)	**NEUROSURGERY**
Arachnoid Cyst	~0.2–1.2%	136,000–816,000	Asymptomatic, typical imaging appearance, no mass effect	If large or causing mass effect (exceptionally rare in adults)	**NEUROSURGERY**
Developmental Venous Anomaly	2-3%	1.2-1.8 million	Nearly always.	If there is some associated additional vascular abnormality like a cavernoma or other radiological abnormality	**NEUROSURGERY**
Frontal lobe volume loss	Not known	Not known	Often just a consequence of dehydration on day of imaging	If cognitive decline, rapid progression, focal neurological symptoms or signs or disproportionate to age	**NEUROLOGY**
Generalised Cerebral Atrophy	Common with age, >30% in elderly	10–20 million (mostly elderly)	Asymptomatic or if age-appropriate	If cognitive decline, rapid progression, focal neurological symptoms or signs or disproportionate to age	**NEUROLOGY**
White Matter High Signal	10–20% (age ≥50)	6–12 million (mostly ≥50). Rising with age	Asymptomatic. Incidental, small, punctate. More common with • Migraine • Vascular risk factors • Premature birth	If cognitive decline, gait disturbance, confluent lesions, or atypical appearance. Note: overseas radiologists commonly report scans as more abnormal than UK neuroradiologists	**NEUROLOGY**

1 Morris Z, *et al.* Incidental findings on brain magnetic resonance imaging: Systematic review and meta-analysis. *BMJ* 2009; **339**: 547–50.
2 Jenkinson MD, Mills S, Mallucci CL, Santarius T. Management of pineal and colloid cysts. *Pract Neurol* 2021; **21**: 292–9.

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