Prevalence and Clinical Relevance of Incidental Extraspinal Findings in Cervical Spine MRI

- A Retrospective Analysis of 2,286 Cases



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Introduction

- Incidental extraspinal findings (IESFs) appear unrelated to primary cervical conditions
 - Some IESFs can be significant or <u>malignant</u>
 - Missed IESFs pose legal and health risks
- Comprehensive imaging review is critical for patient safety
 - Spine specialists often focus on vertebral pathologies
- This study examines IESFs prevalence and outcomes



Methods

- Retrospective review of **2,286 cervical MRIs** (2019–2024)
- Inclusion: Neck pain, radiculopathy, myelopathy
- Exclusion: Malignancy history, known neck tumors, prior cervical surgeries
- MRI sequences: T1, T2, STIR, extending skull base to upper thorax



Methods

- IESFs categorized into
 - Thyroid nodules, Lymphadenopathy, Soft tissue tumors, Brain lesions, Other head/neck lesions
- Demographics analyzed with
 - Chi-square, t-test, Mann-Whitney U (Significance set at p < 0.05)
- Follow-up records reviewed for outcomes or further interventions



Results

- IESFs noted in 103 of 2,286 scans (4.5%)
- Females more affected (64.4% vs. 35.6% in males, p < 0.001)
- Mean age higher with IESFs (58.4 vs. 54.7 years, p=0.033)
- Thyroid nodules most common (64 cases, 2.0%)





Sagittal (A) and axial (B) T2W cervical MRI of a 70-year-old male showing foraminal stenosis (C5-C6) and a herniated disc (C6-C7), consistent with radiculopathy. A 2 cm irregular lymph node (arrow, **C**) in the right lower carotid-jugular chain was confirmed as **metastatic** adenocarcinoma (CK7+, TTF1+), suggestive of a primary lung origin. (CK: Cytokeratin, TTF: Thyroid **Transcription Factor**)







Sagittal (A) and axial (B) T2W cervical MRI of a 56-year-old male showing severe C5–6 stenosis with hyperintense spinal cord foci (red **arrow**), suggesting compression myelopathy. A 1 cm cystic <u>thyroid nodule</u> (yellow arrow, C) was incidentally found and confirmed as **papillary** carcinoma via fine-needle aspiration.







Sagittal (**A**) and axial (**B**) T2-weighted cervical MRI in a 52-year-old diabetic female with left arm pain and paresthesias. Imaging shows C5–6 disc protrusion (red arrow), bilateral perineural cysts at C6, and a <u>cystic pituitary mass</u> (*, **C**) suggestive of a <u>macroadenoma</u>. The patient underwent endoscopic endonasal transsphenoidal surgery after neurosurgical evaluation.



Results

- Lymphadenopathy: 16 (0.5%), Soft tissue tumors: 4, Brain lesions: 6, Other head/neck lesions: 13
- Nine lacked follow-up, four IESFs initially overlooked
- 94 followed: **seven malignant** (five thyroid, two lymph nodes)
- Two surgeries for pituitary or parathyroid adenomas



Discussion

- Missed IESFs underscore short consultation times in Korea's highvolume outpatient environment
 - Physicians must quickly see many patients, increasing risk of oversights
- Systematic reviews or AI could enhance detection
- Malpractice liability grows when clinically significant lesions go unnoticed
- Missed nodules or lymph nodes can delay essential treatment



Conclusion

- IESFs detected in 4.5% of cervical MRIs, some malignant
- Systematic protocols safeguard patient welfare and reduce malpractice risk
- Interdisciplinary management is key for prompt treatment
- Further prospective studies needed for evidence-based guidelines

