# AMSER Case of the Month
## June 2024

## 54-year-old presents with worsening left-sided paresthesias and numbness

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# Patient Presentation

- **HPI**: 54-year-old female presented to the ED for evaluation of progressively worsening left-sided paresthesias and numbness over the past 3 months. Affected area included the entire left upper extremity from the level of the axilla to the digits.
- **PMHx**: Herpes zoster 3 months prior; developed a painful, erythematous maculopapular rash on the left side of her back extending to the left breast. Treated with valacyclovir and gabapentin.

# Patient Presentation

- **Physical Exam**: LUE showed decreased sensation to light touch, increased pinprick sense circumferentially from the axilla to fingers.

  CN V showed decreased sensation to light touch, temperature, and vibratory sense on left face with splitting of the midline.
- **ROS**: (+) LUE weakness, LUE numbness, LLE numbness, urinary incontinence, intermittent left occipital headaches

  (–) bowel incontinence, photophobia, nausea, dysarthria, dysphagia, vision changes

# Pertinent Labs

- **CSF**: elevated **leukocytes**, normal protein levels
- **B12**: elevated
- **AQP4 antibody titer**: negative

# What Imaging Should We Order?

# ACR Appropriateness Criteria

**Variant 2:** **Chronic or progressive myelopathy. Initial imaging.**

| Procedure | Appropriateness Category | Relative Radiation Level |
|---|---|---|
| MRI spine area of interest without and with IV contrast | Usually Appropriate | O |
| MRI spine area of interest without IV contrast | Usually Appropriate | O |
| CT myelography spine area of interest | May Be Appropriate | Varies |
| CT spine area of interest with IV contrast | May Be Appropriate | Varies |
| CT spine area of interest without IV contrast | May Be Appropriate | Varies |
| Arteriography spine area of interest | Usually Not Appropriate | Varies |
| Radiography spine area of interest | Usually Not Appropriate | Varies |
| MRA spine area of interest with IV contrast | Usually Not Appropriate | O |
| MRA spine area of interest without and with IV contrast | Usually Not Appropriate | O |
| MRA spine area of interest without IV contrast | Usually Not Appropriate | O |
| MRI spine area of interest with IV contrast | Usually Not Appropriate | O |
| CT spine area of interest without and with IV contrast | Usually Not Appropriate | Varies |
| CTA spine area of interest with IV contrast | Usually Not Appropriate | Varies |

This imaging modality was ordered

# Findings (unlabeled)

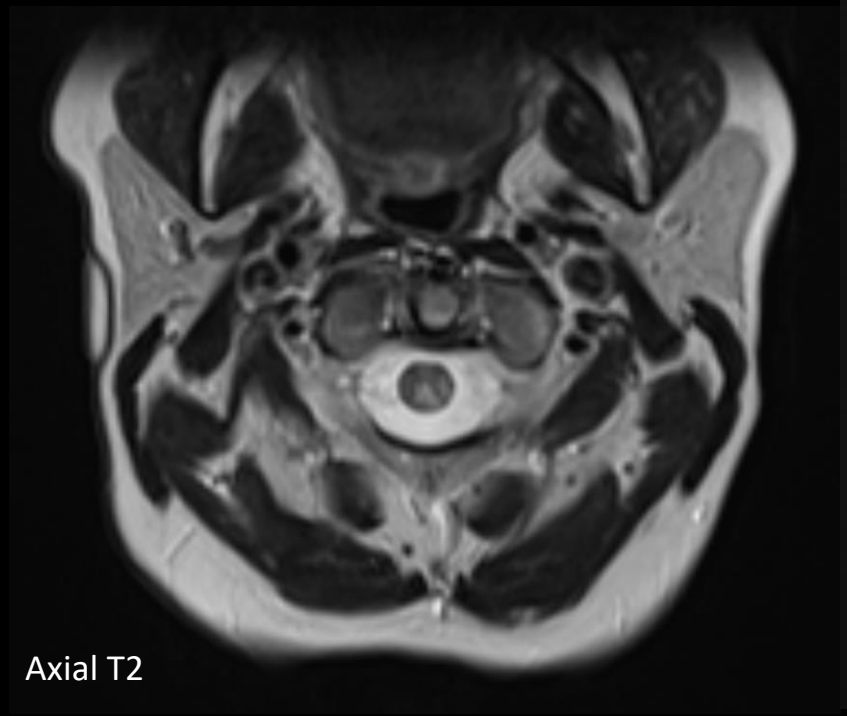
Sagittal T2

Sagittal
STIR

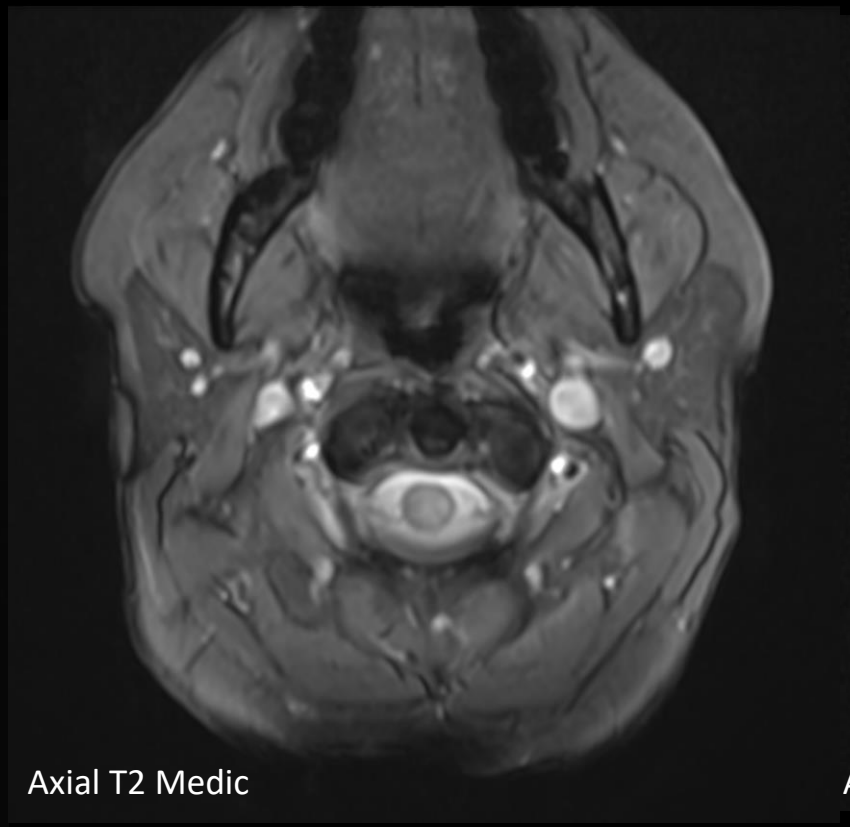
Sagittal T1

Sagittal T1 Post

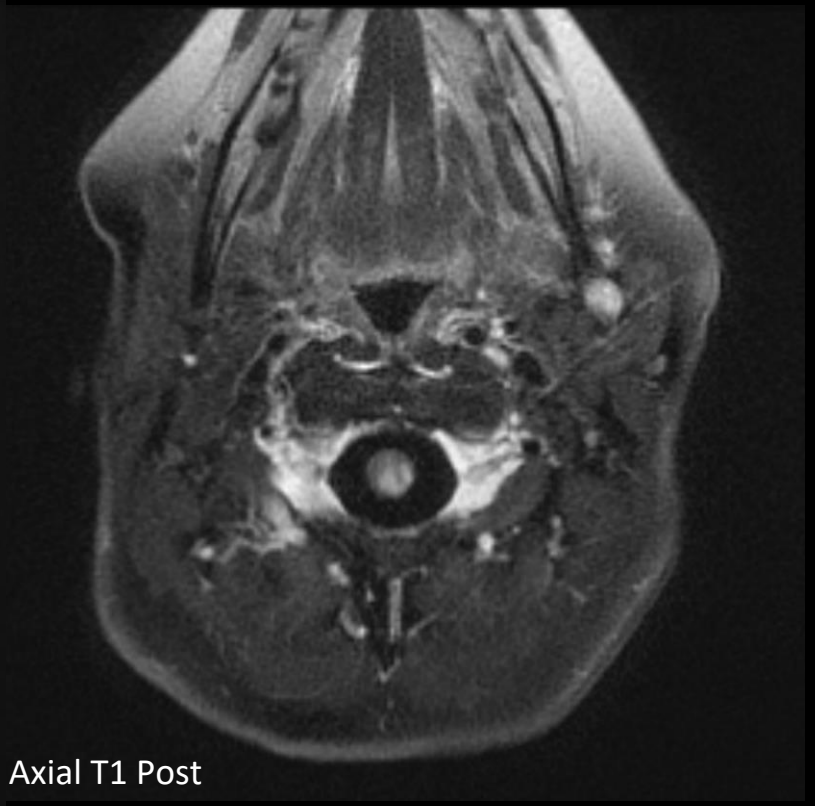
# Findings (unlabeled)



Axial T2



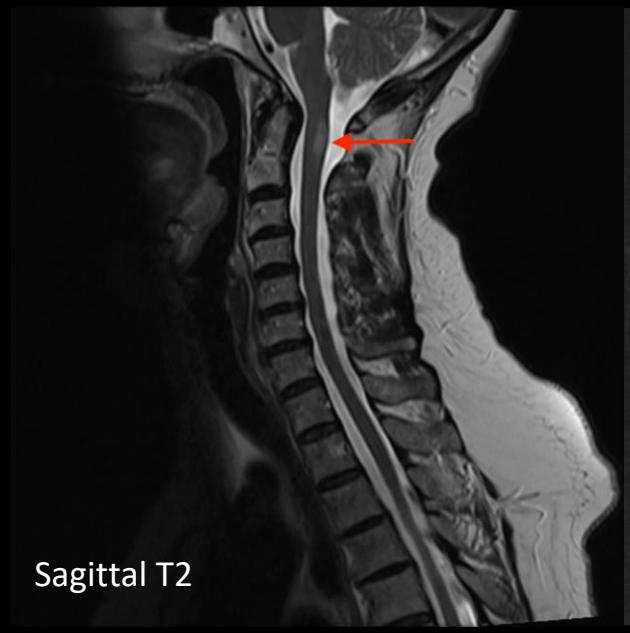
Axial T2 Medic

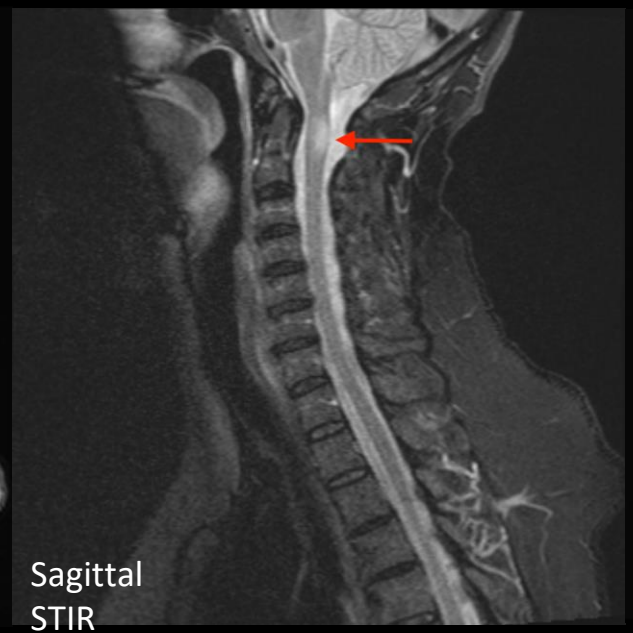


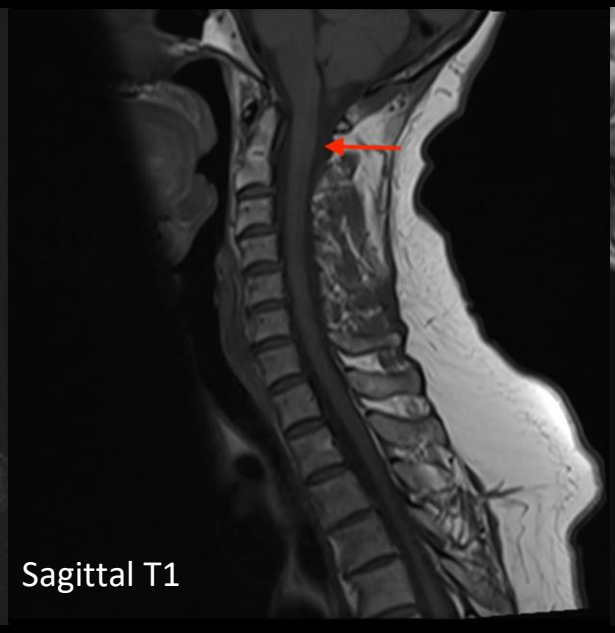
Axial T1 Post

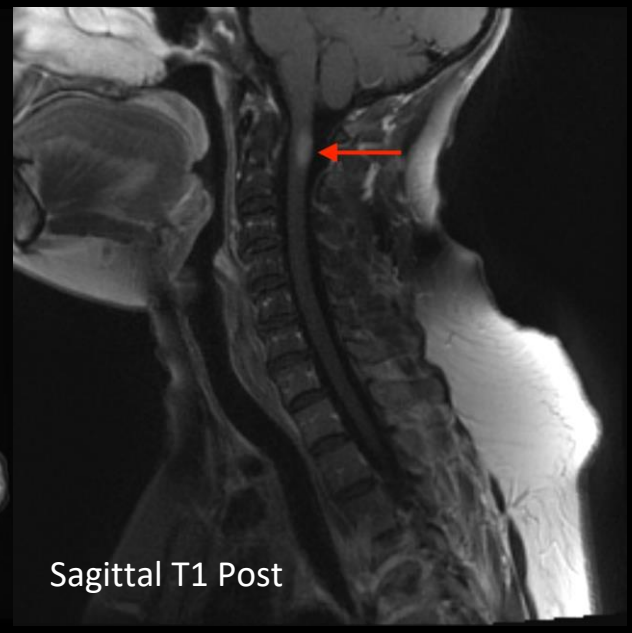
# Findings (unlabeled)

# Findings (labeled)




Sagittal T2, STIR, T1, and T1 post-contrast imaging sequences of the cervical spine showing a T2/STIR hyperintense lesion (red arrows) in the upper cervical spine at the level of C2 with mild cord enlargement (red arrow) on T1 and enhancement (red arrow) on post-contrast images.

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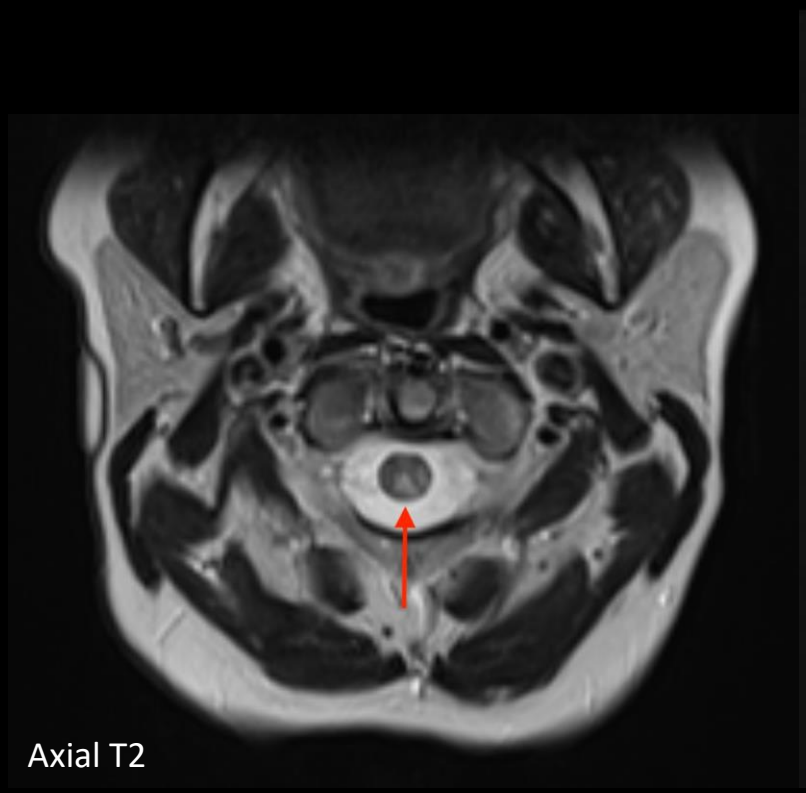
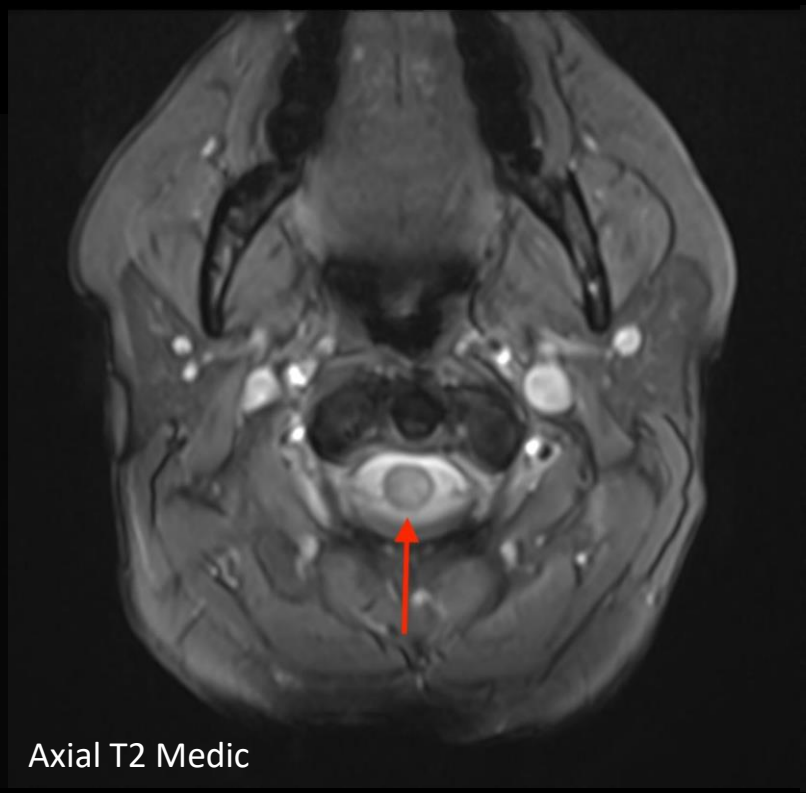
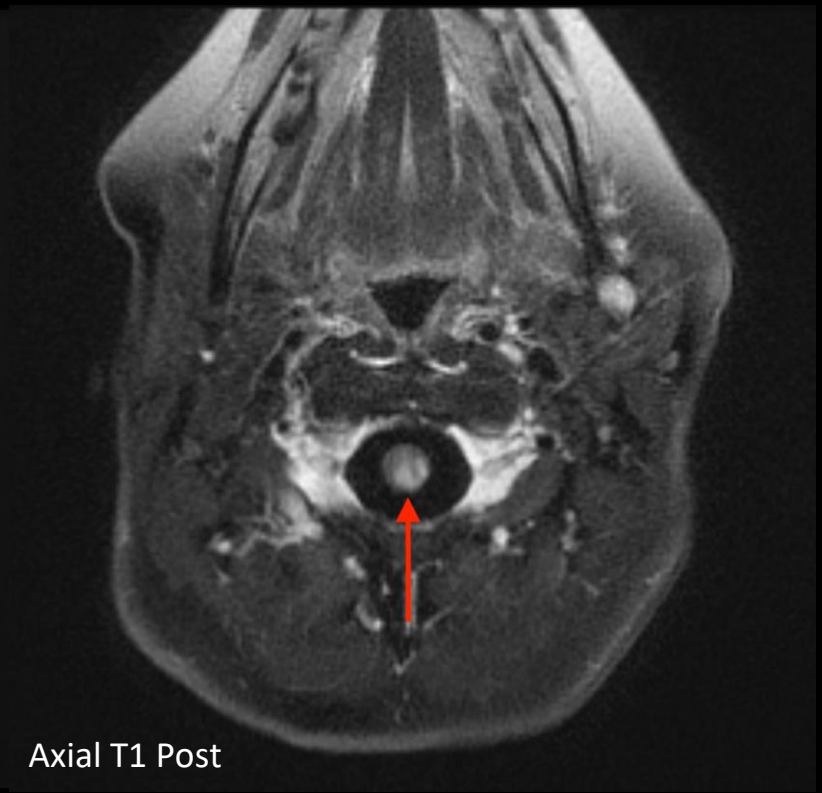
# Findings (labeled)


Axial T2


Axial T2 Medic


Axial T1 Post

Axial T2, STIR, and T1 post-contrast imaging sequences of the cervical at the level of the dens and C1 lateral masses showing a T2/STIR hyperintense lesion (red arrows) with enhancement (red arrow) on post-contrast images.

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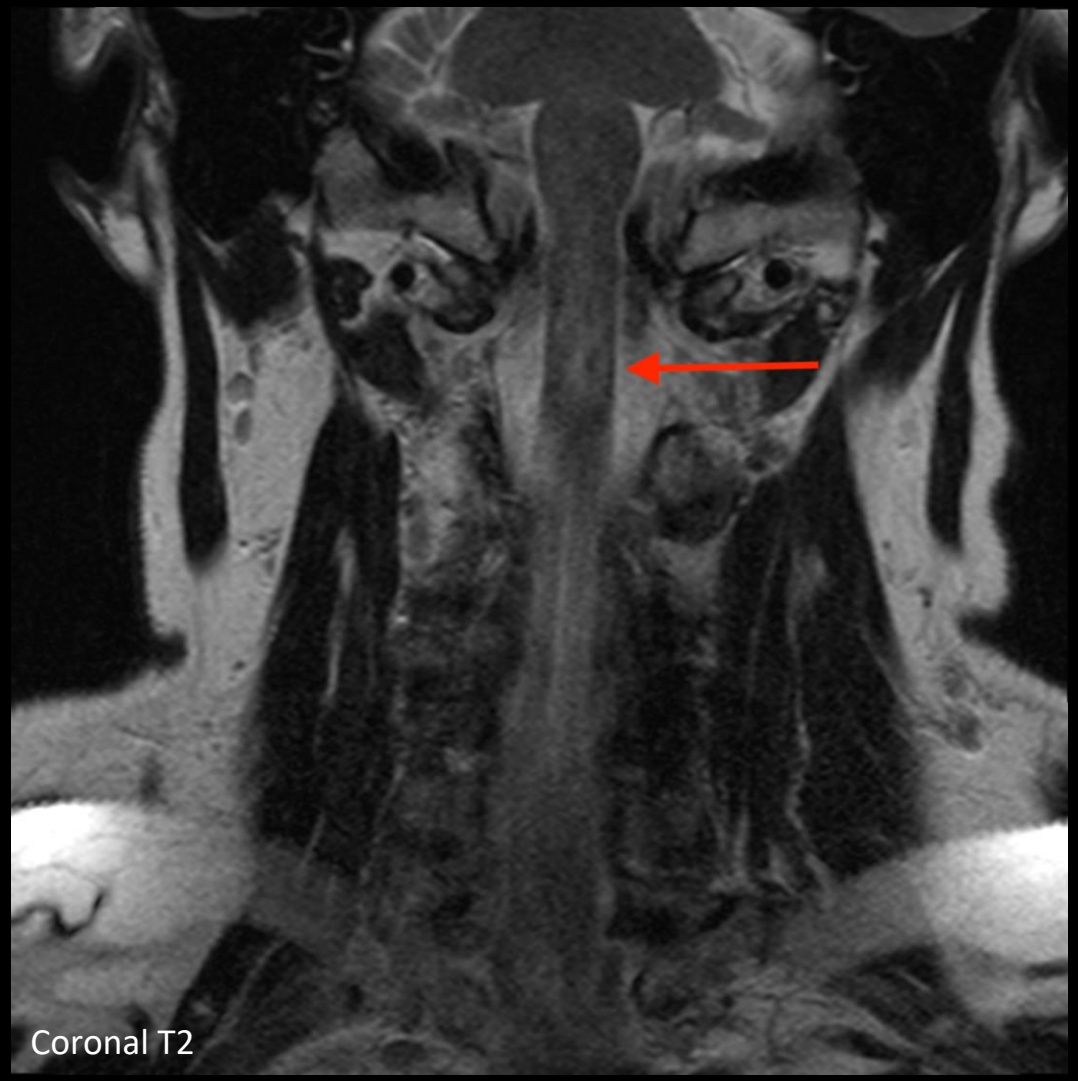
# Findings (labeled)




Coronal T2 imaging sequence of the cervical spine showing a T2 hyperintense lesion (red arrow) in the upper cervical spine at the level of C2.

# Final Dx:

Varicella Zoster-Induced Transverse Myelitis

# Transverse Myelitis

## MRI

- Variable appearance
  - 40% of clinical transverse myelitis have no MRI abnormalities
- Signal characteristics:
  - T1: Iso-/hypo-intense
  - T2: Focal hyperintense
  - STIR: Hyperintense
  - Post-contrast: Variable (none, patchy, diffuse, peripheral)
- Lesion characteristics
  - Variable size, usually occupy 3-4 spinal segments and takes up ⅔ of the cross-sectional area
  - Variable cord enlargement
- Cord enlargement and enhancement can resolve with clinical improvement

# Case Discussion

## Epidemiology of Varicella Zoster Virus (VZV)

- Over 300,000 cases of herpes zoster (shingles) in the US per year
- Incidence is 8-10x higher in patients over 60 years of age than in younger patients
- Varicella-related myelopathy and myelitis is reported in only **0.3%** of VZV patients

# Case Discussion

## Typical Presentation

- Onset of myelitis symptoms ranges from **acute to subacute** (up to 2 months) following herpes zoster rash eruption.
- More frequently seen in immunocompromised patients; immunocompetent patients tend to have better recovery.
- Most commonly involves **thoracic dermatomes**. Presents with **hypoesthesia, paraparesis, and neuropathic pain** on the **ipsilateral** side.
- Lower motor dysfunction, especially sphincter dysfunction, **urinary incontinence**, and impaired ambulatory function are common sequelae.

# Case Discussion

## Indicated Treatment

- Antiviral + glucocorticoid
  - Acyclovir/valacyclovir and tapered methylprednisolone given simultaneously
  - Gabapentin for neuropathic pain

This patient was treated with **valacyclovir**, **gabapentin**, and high-dose **methylprednisolone IV** inpatient, and was given **prednisone PO** at discharge to take at home.

# References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4. Sebastian AP, Basu A, Mitta N, Benjamin D. Transverse myelitis caused by varicella-zoster. BMJ Case Reports. 2021;14(8):238078. doi:10.1136/BCR-2020-238078
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