

# When Pain Follows a Path: Understanding Dermatomes and the Body's Neural Map

*Or, "Why do my knees itch after shoveling snow?"*

## Dermatome Key

C—Cervical  
T—Thoracic  
L—Lumbar  
S—Sacral  
Co—Coccygeal

The spinal nerves intermix considerably during the formation of peripheral nerves. The dorsal and ventral rami remain somewhat distinct in the thoracic region, but the ventral rami form extensive plexuses in the cervical and lumbosacral regions. Because of this, most peripheral nerves contain fibers from two, three, four, or five ventral rami. Consequentially, the cutaneous areas supplied by the peripheral nerves do not correspond to the dermatomal distributions of the dorsal roots.

\*Actual boundaries of the dermatomes and peripheral nerve innervation are quite variable; use the borders on this chart as guidelines.



*“It all  
started with  
a water  
jug...”*

*And... a feeling of  
invincibility!*

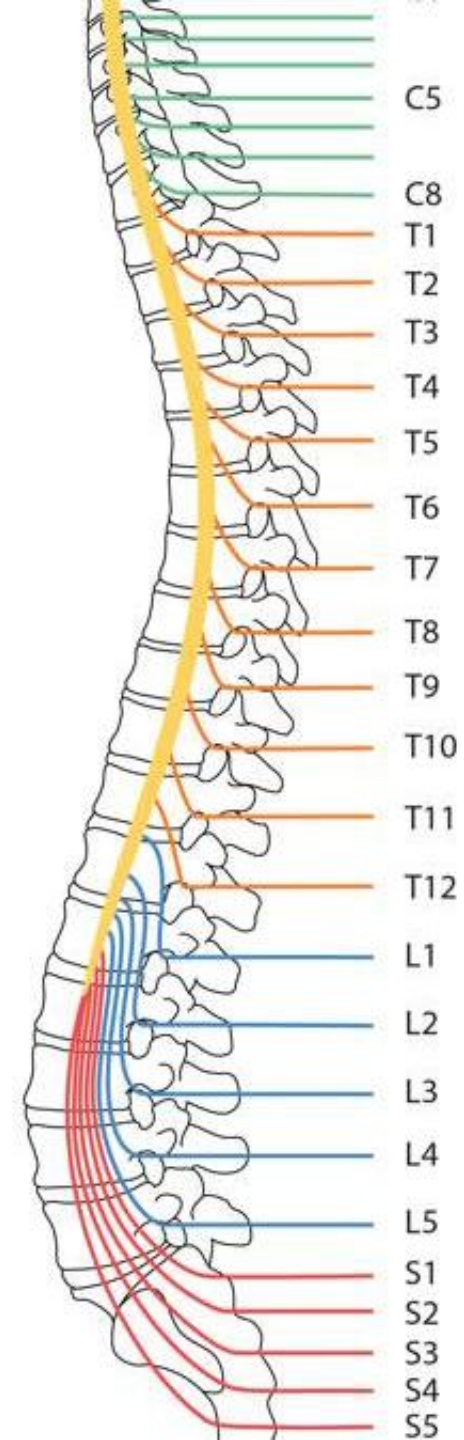
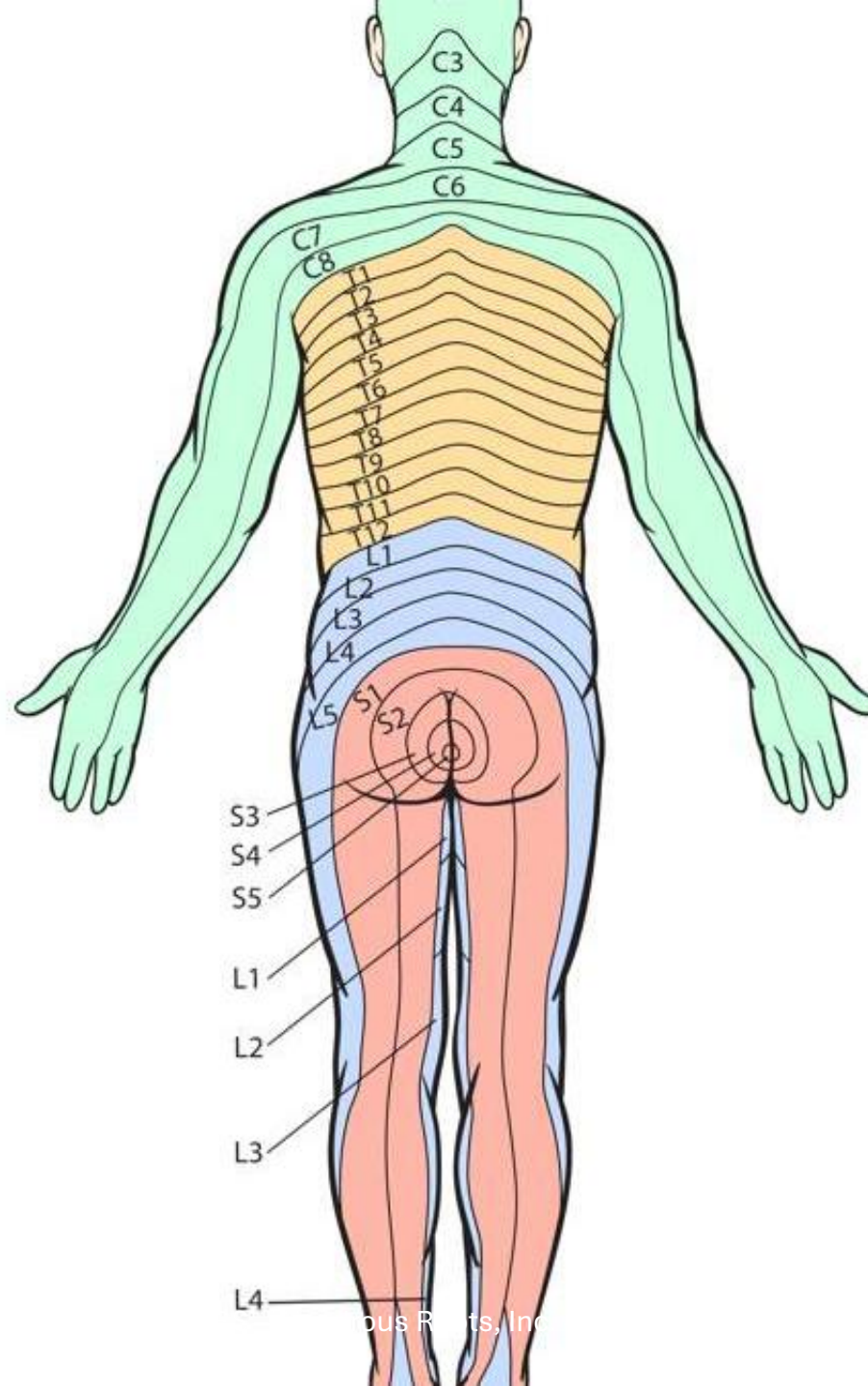
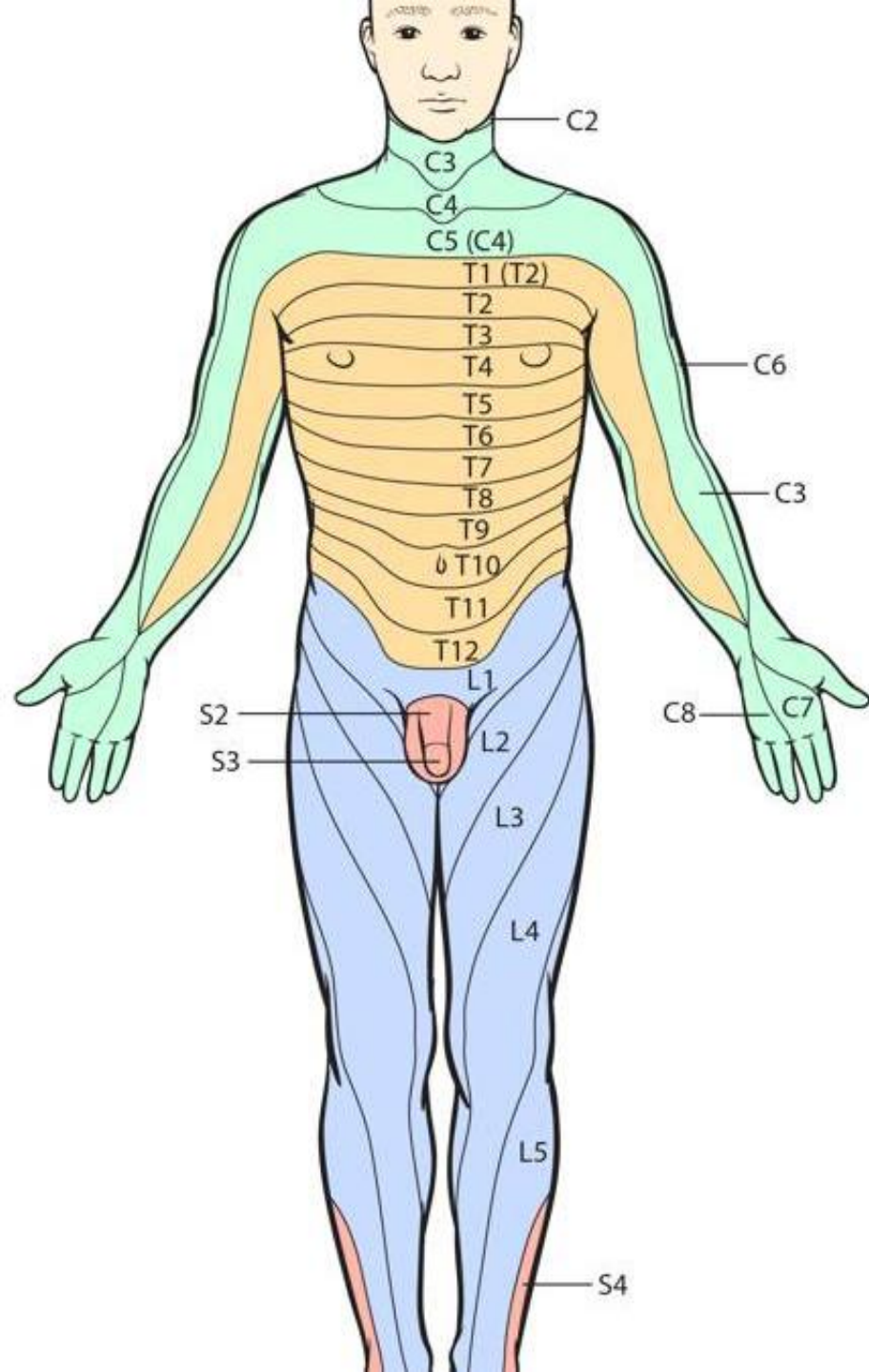




# 😲 Wait! When it looks like shingles... but it's not!

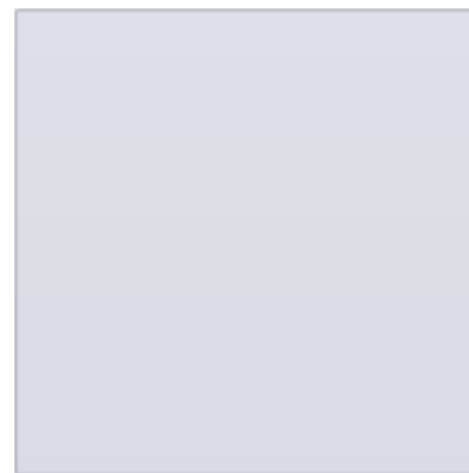
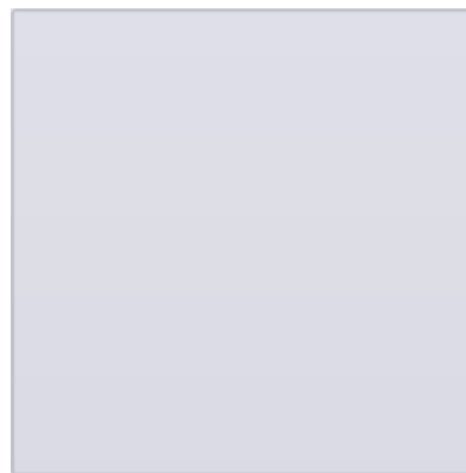
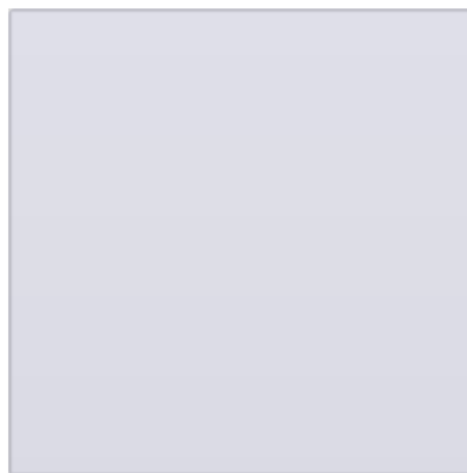
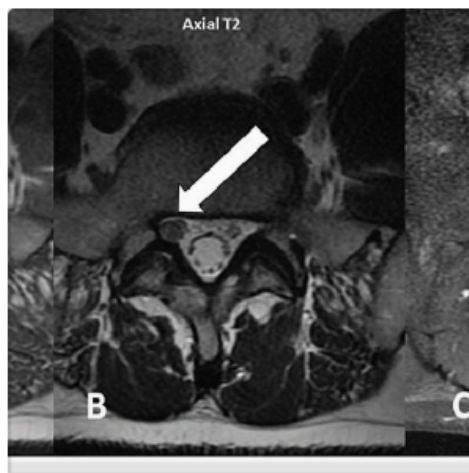
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This is my leg three days after the water-jug kerfuffle – note the two spots (well, you can only see one; but trust me) on my inner knee – **that's L4**. Then look at the track of rash down my shin; **that's L5**! In addition, I have a spot to the left of my left butt-cheek and a spot of sensation on top of my left foot. The classic L5-dermatomal pattern! The sensation started with itch but combines some numbness and pain, with itch only lingering in the most recent butt-cheek area. Fascinating, right?????





→ Source publication



## Segmental Zoster Paresis of the Unilateral Lower Extremity With Neuritis MRI Findings: A Case Report and Literature Review

Article

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Oct 2022



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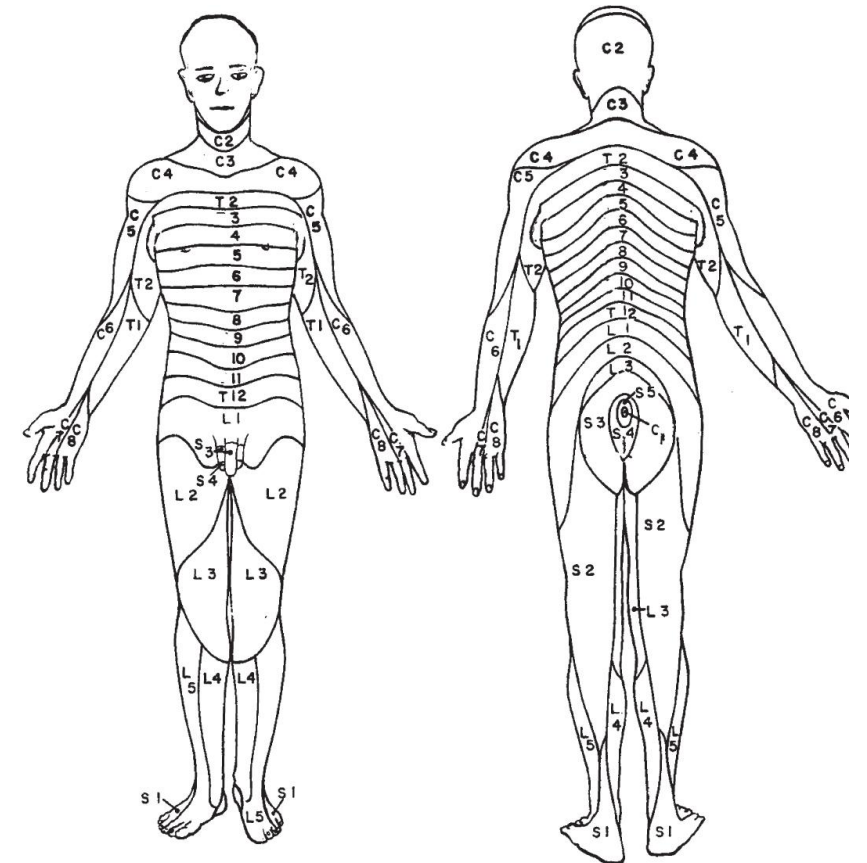


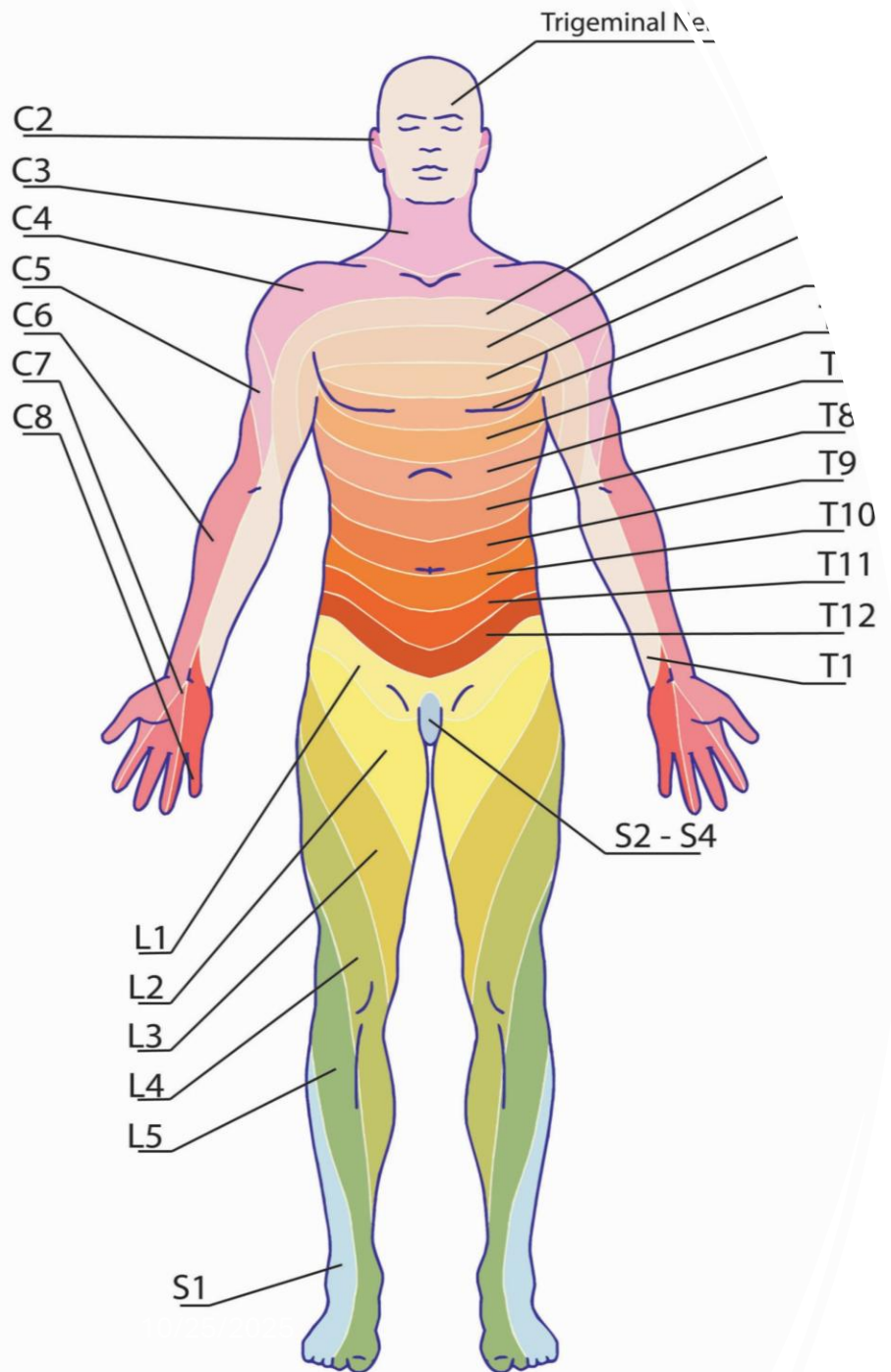
Azmi Hamzaoglu

Herpes zoster (HZ) is a common clinical condition caused by the reactivation of the latent varicella-zoster virus (VZV). Neurological complications after HZ have been described, including a rare condition of segmental zoster paresis (SZP), which results in unilateral motor impairment in the extremities. Only two cases of HZ patients with radiculopa...

# What Is a Dermatome?

- A *dermatome* is an area of skin supplied by sensory fibers from a single spinal nerve root.
- Think of dermatomes as **geographic zones** on the body's “neural map.”
- Each spinal nerve carries sensory information from a specific strip of skin back to the spinal cord and brain.
- There are 31 pairs of spinal nerves, grouped as:
  - 8 cervical (C1–C8)
  - 12 thoracic (T1–T12)
  - 5 lumbar (L1–L5)
  - 5 sacral (S1–S5)
  - 1 coccygeal





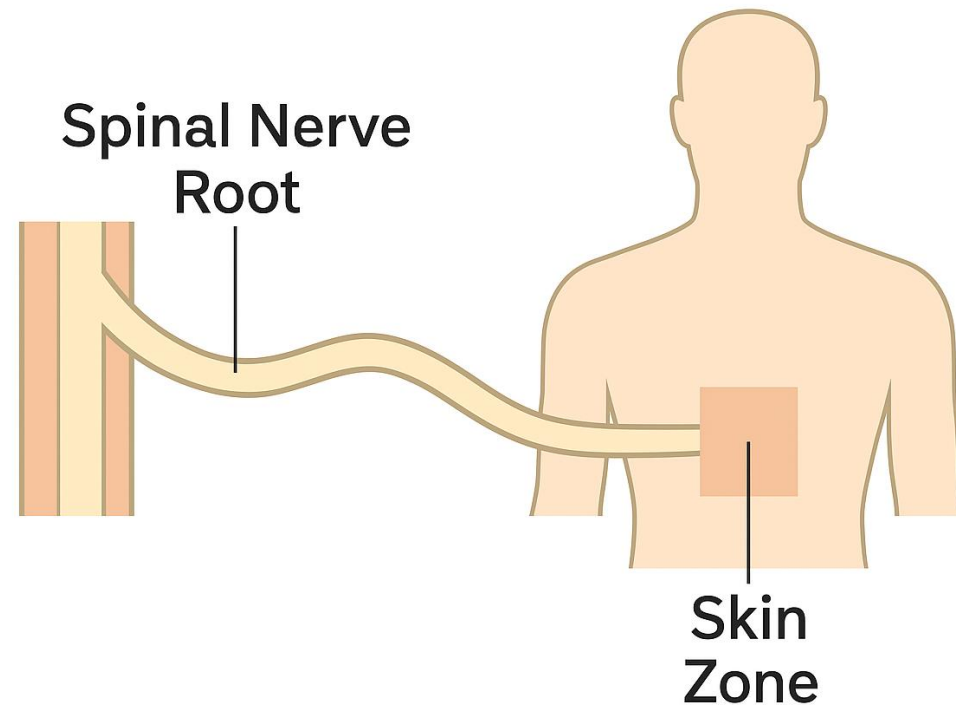
# Why Dermatomes Matter

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- Because the same nerve root supplies both **skin (sensation)** and **muscles (movement)**, symptoms can overlap.
- If a nerve root is irritated, you might feel:
  - Pain
  - Itching
  - Tingling
  - Numbness
  - Burning
  - Even rashes (via neurogenic inflammation)
- **Key idea:** The symptom's *location* is often the clue to the *source*.

# The Anatomy of a Dermatome

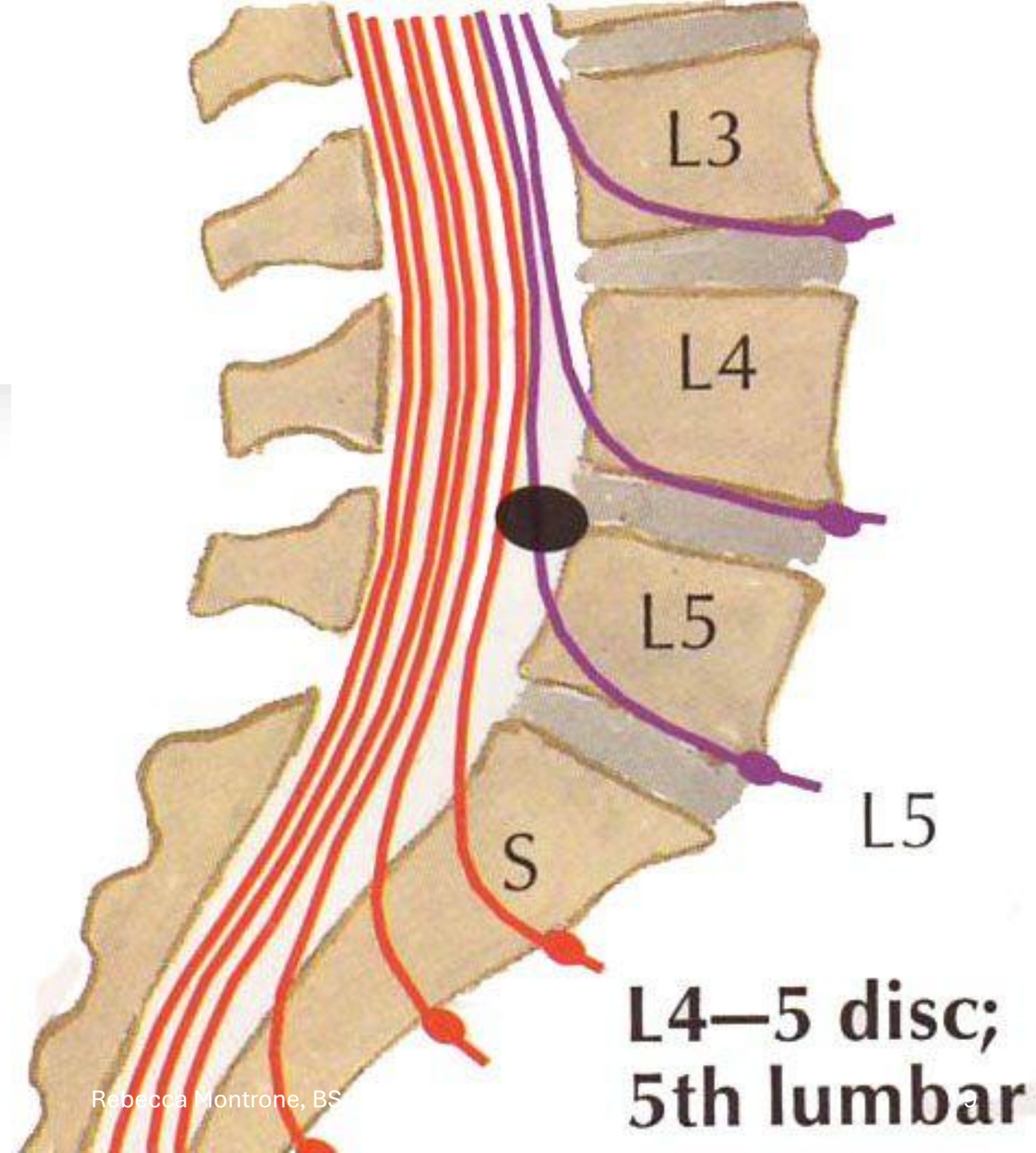
- Each spinal nerve exits the spinal cord via the intervertebral foramen.
- The dorsal (posterior) root carries **sensory fibers** to the skin.
- Those fibers fan out and create distinct “territories.”
- The brain then interprets sensations from those regions as coming from specific spots.
- That’s why doctors can test sensation in a certain area to pinpoint which spinal nerve might be affected.





# The L4–L5 Connection in my case...

- The **L4–L5** nerve roots supply:
  - Lower back
  - Outer thigh and knee
  - Front and side of the shin
  - Top of the foot
- Irritation in this region (from lifting, disc compression, or muscle tension) can manifest as:
  - Pain in the low back or hip
  - Tingling or itching down the leg
  - Numbness in the shin or top of the foot
- This exactly matches my skin eruption!



# Neurogenic Inflammation: When Nerves Create Rashes

- Nerves don't just *send* pain; they also *release chemicals* that affect skin cells and blood vessels.
- When irritated, sensory nerves release:
  - **Substance P**
  - **Calcitonin gene-related peptide (CGRP)**
  - **Histamine**
- These cause redness, swelling, and itching — a *localized inflammatory response*.
- This is called **neurogenic inflammation**.
- It can mimic a rash but is neurologically driven, not allergic or autoimmune.
- Analogy: “The nerve throws a local temper tantrum.”







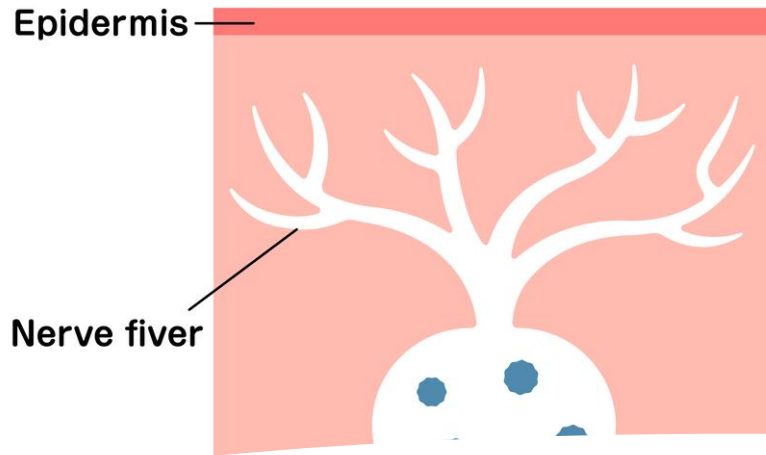
# Common Dermatomal Clues

## Examples:

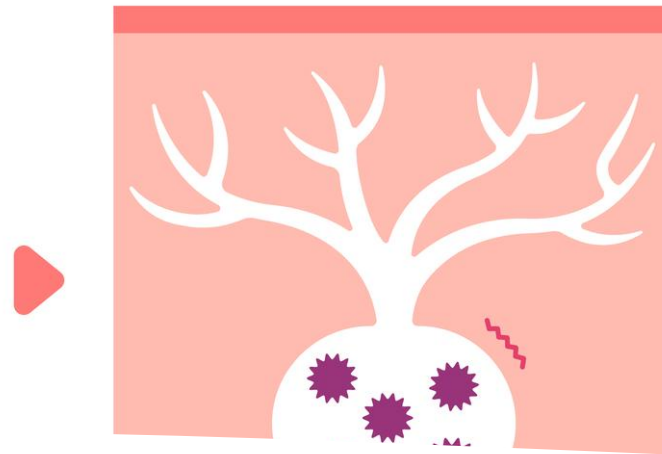
- **C5–C7 (neck & shoulders):** tingling into the arm or hand.
- **T4–T6 (“bra-strap line”):** itching, burning, or pain around mid-back or under the chest.
- **L4–S1 (low back & legs):** sciatica, shin itching, or numb toes.
- **S3–S5:** genital or perianal sensation (relevant in shingles, spinal injury).
- **Shingles:** classic dermatomal expression — pain and rash following a single nerve root.
- The body doesn’t speak randomly — it’s *mapped*.



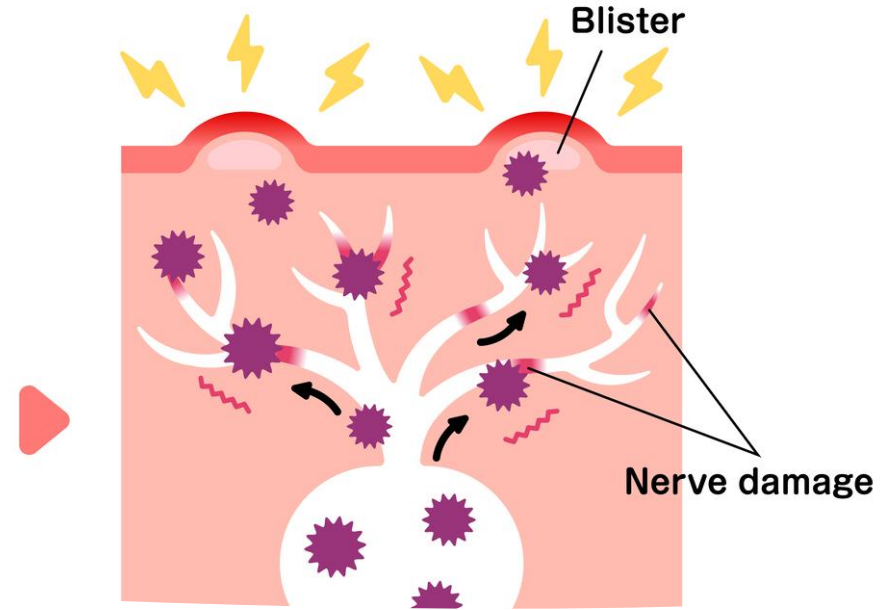
Incubation period



Weak immune system



Shingles



## Shingles and the Dermatome Connection

Shingles, or **herpes zoster**, is a vivid example of how precisely the body's nerves map the skin. After a childhood chickenpox infection, the virus lies dormant in a **dorsal root ganglion**—the sensory hub for a single **dermatome**. When reactivated later in life, it travels down that nerve to the skin, producing pain and a blistering rash **confined to that one dermatome**—always on one side of the body and never crossing the midline. While shingles is caused by a **viral infection**, other types of nerve irritation—such as **mechanical compression or inflammation**—can mimic its pattern with itching, numbness, or redness but *without* viral vesicles. Both conditions illustrate how a single irritated nerve root can express itself along its **dermatome**, or even trigger muscle spasms in its **myotome** partner.

# Viral vs. Non-Viral: Two Roads, Same Destination

Feature	Viral (Shingles)	Non-Viral (Mechanical/Inflammatory)
Trigger	Varicella-zoster virus reactivation	Compression, strain, ischemia, chemical inflammation
Damage Type	Viral replication inside nerve cells	Mechanical trauma and inflammatory edema
Rash Cause	Viral particles + neurogenic inflammation	Pure neurogenic inflammation
Sensation	Burning, stabbing pain	Itching, tingling, numbness, mild rash
Chronic Outcome	Post-herpetic neuralgia (PHN)	Post-compression neuralgia (same mechanisms)

# “I AM *NOT* COLD!”

As I was telling this story to someone yesterday, she exclaimed, “That’s why I my knees and shins itch whenever I shovel snow!” “My husband shrugs it off and says, ‘It’s just because you’re cold,’ and I tell him, I am *NOT* cold!” She went on to explain her mother has always had back issues, and that when she, herself, shovels snow, her back will bother her, **AND** her knees and shins will itch; she’s not COLD, her compressed lumbar disks are screaming “*UNCLE!*”







# Myotomes: The Motor Side of the Story

Now... this is where I get to tell you about my thigh spasms! A **myotome** is a group of muscles controlled by the motor fibers of a single spinal nerve root.

## Quadriceps and the L4–L5 Connection

- **L4** is the primary motor supply to the **quadriceps femoris**, the big muscle group on the front of the thigh.
- **L5** contributes a bit but mostly handles tibialis anterior (shin flexion, dorsiflexion).
- If the **L4 nerve root** is even mildly compressed or inflamed, the quadriceps can become *hyperexcitable* — alternating between brief weakness and spontaneous spasms.

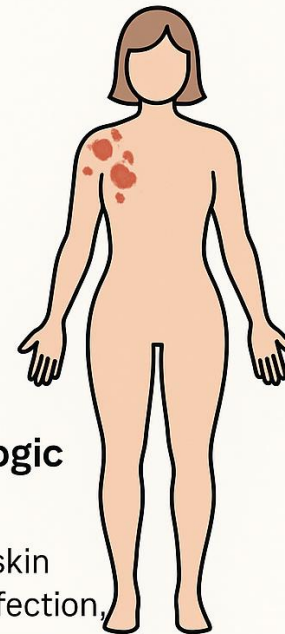
# Why We Often Misinterpret These Symptoms

- We often assume:
  - Skin rash → allergy
  - Leg pain → circulation issue
  - Itch → dryness
- But sometimes the true origin is *neurological*, not dermatological.
- Key sign: one-sided, linear, patterned, or sensory change (numbness/tingling).

## Dermatologic vs. Neurologic Rash

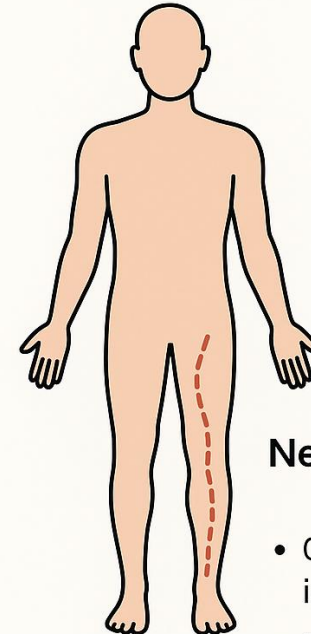
### Dermatologic Rash

- Caused by skin irritation, infection, or autoimmune reaction
- Affects one or more areas



### Neurologic Rash

- Caused by nerve irritation or damage
- Follows a dermatomal pattern





# What to do?

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- Get chiropractic help to realign the spine – I have not made this happen yet!
- I used my [Wondrous NeuroVive](#) on the rash areas and spinal area once I realized what was going on – at first, I had started with plantain salve thinking these were insect bites!! LOL.
- Nerve/muscle supporting nutrients, such as:
  - PEA
  - B1 (benfotiamine form is best)
  - B12
  - B6
  - Magnesium
  - ADVIL – I never miss a dose! LOL!!!



# Topical Nerve Support: NeuroVive

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- *“My rash calmed when I switched from plantain to NeuroVive.”*
- Why:
  - **DMSO** enhances penetration and reduces inflammation.
  - **Emu oil** carries nutrients deep into tissue.
  - **Magnesium chloride** relaxes nerves.
  - **PEA** modulates overactive pain signals.
  - **R-lipoic acid** restores mitochondrial nerve energy.
  - **B12, benfotiamine, P-5-P** rebuild myelin and nerve function.

# Lifestyle and Prevention

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- **Movement:** keep joints and spine flexible (yoga, stretching).
- **Lifting:** engage core, bend knees, avoid twisting lifts.
- **Hydration & electrolytes:** nerves conduct electricity through water and minerals.
- **Posture & ergonomics:** avoid nerve compression from chronic sitting.
- **Gentle heat or Epsom baths:** relax tension and improve circulation.



# When to Seek Help

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- If numbness or weakness spreads.
- Loss of bladder or bowel control (emergency).
- Severe pain not relieved by rest or self-care.
- Gradual, progressive weakness.
- These may indicate significant root compression or herniation.







# The Wonder of the Design

*The body's wiring isn't random — it's precise and purposeful.*

*Every sensation, even discomfort, is communication.*

*Psalm 139:14: 'I am fearfully and wonderfully made.'*