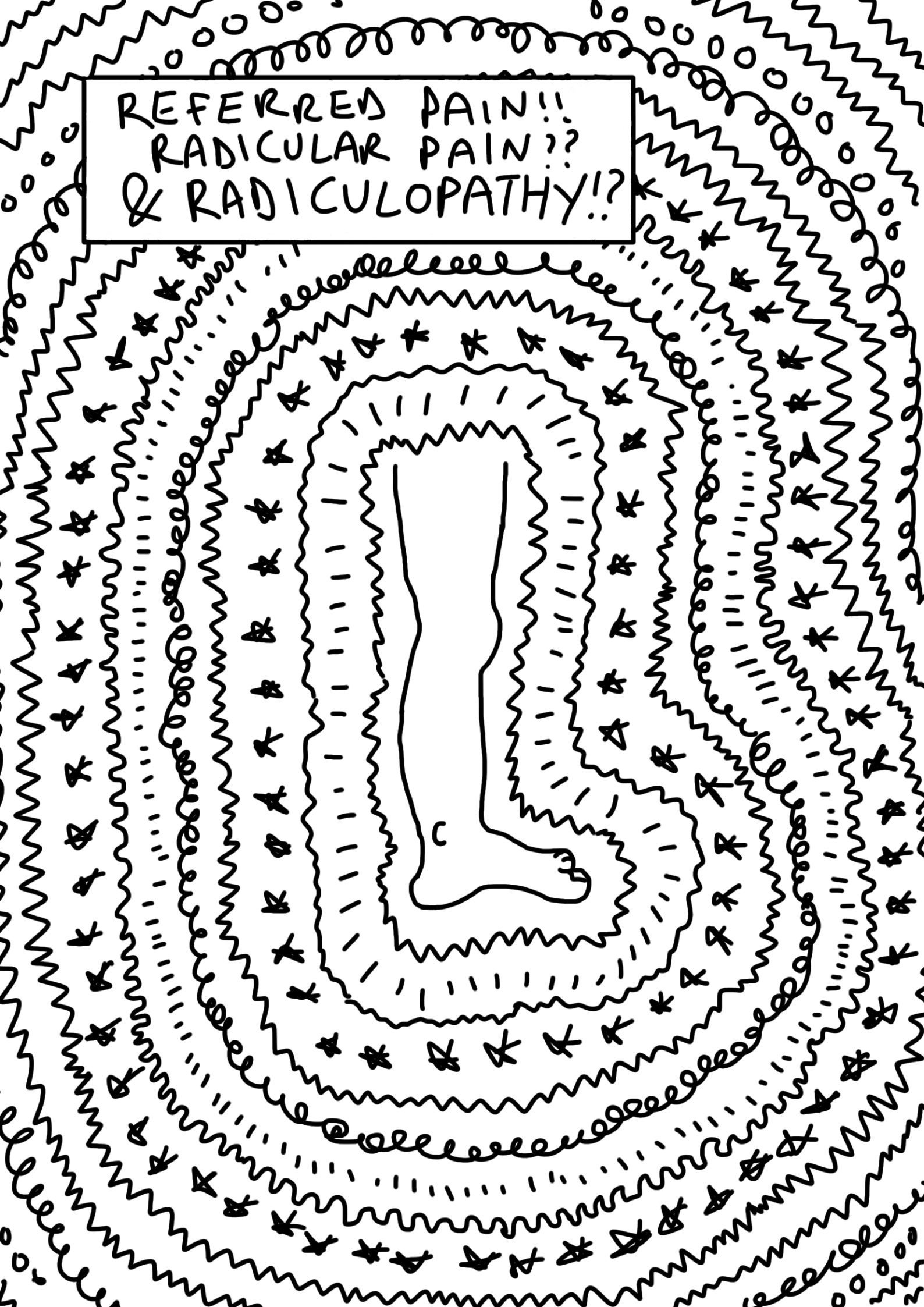


REFERRED PAIN!!
RADICULAR PAIN??
& RADICULOPATHY!?



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What you're reading...



This little 'zine' explains the difference between three commonly - confused phrases: REFERRED PAIN, RADICULAR PAIN, and RADICULOPATHY

Here's the contents:

Anatomy



Referred pain



Radicular pain



Radiculopathy



Summary



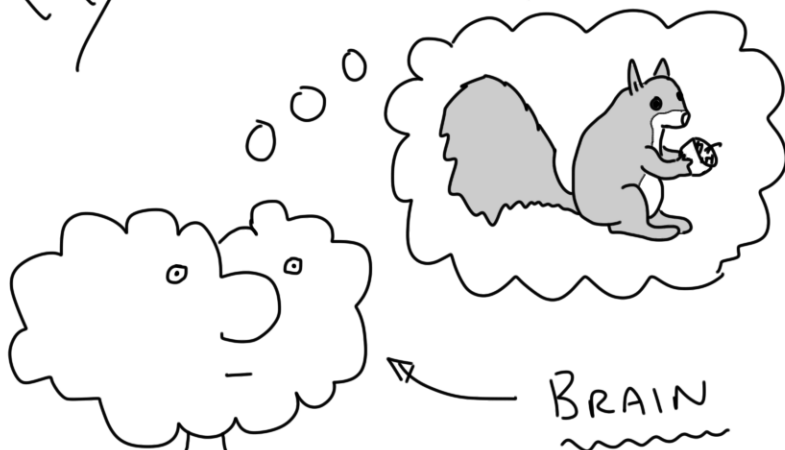
Causes

Oh, and I invented this weird character. He pops up throughout the zine... he's supposed to be a DORSAL ROOT GANGLION.



ANATOMY

YOU'LL
WANT
TO
KNOW



BRAIN

(complicated, beyond my pay grade)

ACTION POTENTIALS

Sensory signals go from tissue → brain
Motor signals from brain → muscle!

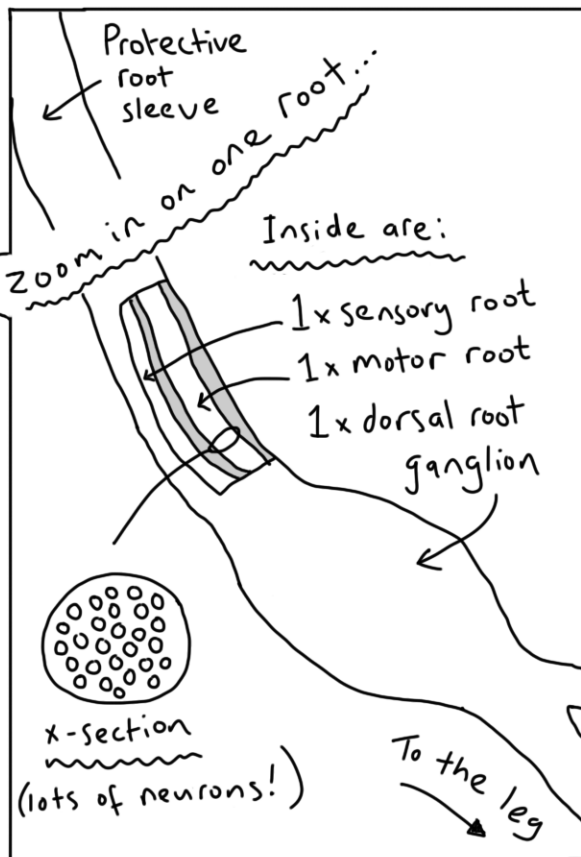
SPINAL CORD

↑ Sensory signals go up...
↓ Motor ones go down...

NERVE ROOTS

kind of like slip roads that connect the spinal cord to the peripheral nervous system

CAUDA EQUINA
(Bundle of lumbar + sacral nerve roots)



LEG
(hands are too hard to draw)

Sensory input starts an action potential



REFERRED PAIN

A well-known example is a heart attack


Problem = 

Pain = 

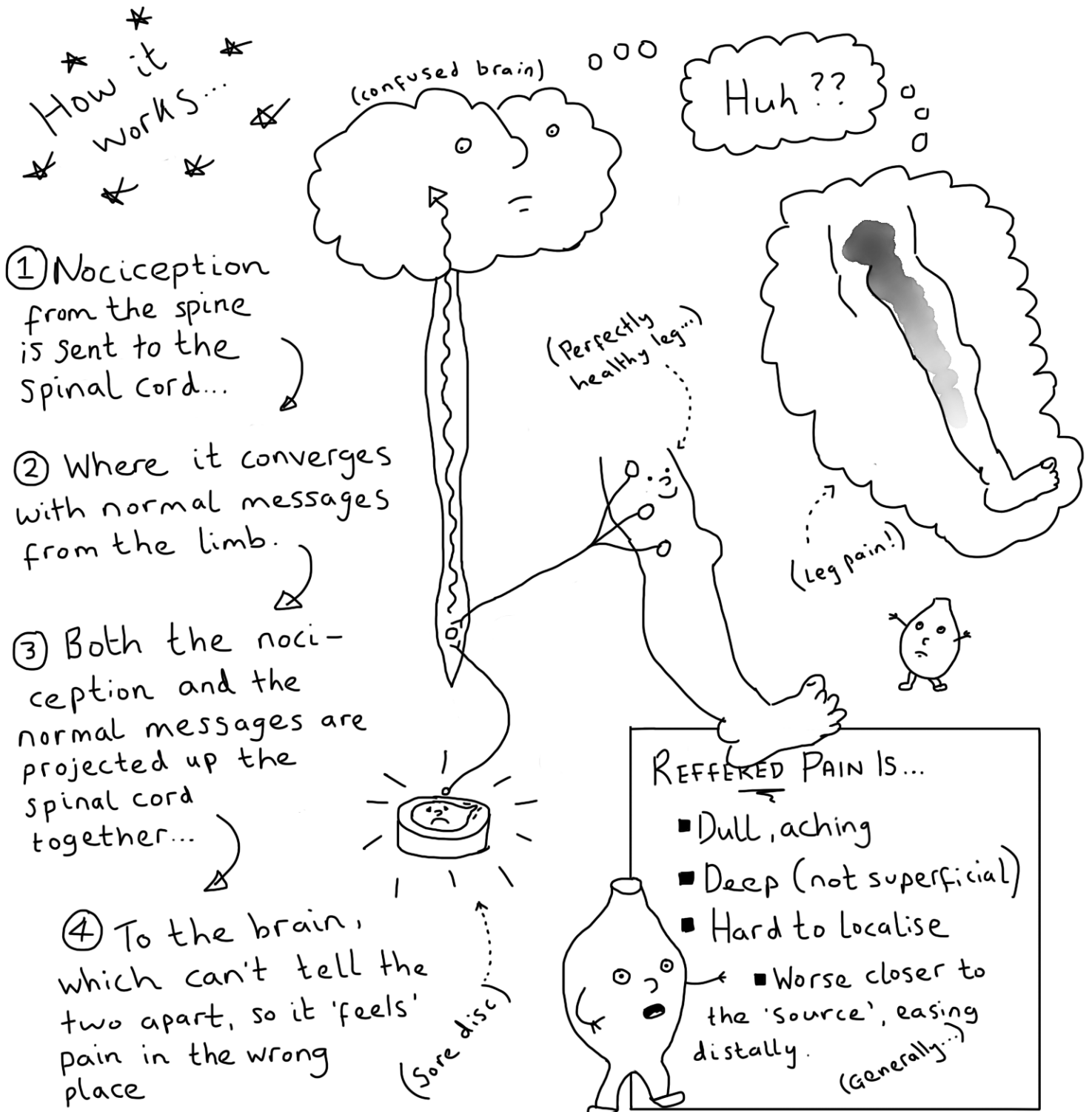


And we see referred pain all the time in MSK...

It's just pain felt in a place other than the 'source' of pain.



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RADICULAR PAIN ⚡

Usually a sharp, shooting pain

Sometimes with a background ache/burn

Often accompanied by extra, "nervey" sensations

← pins & needles
cold →
← itch
prickling →
crawling

- Often worse distally than proximally
- Can be SEVERE

* * *
* How IT WORKS *
* * *

① An irritated nerve root + ganglion send BURSTS of action potentials up to the brain

Something bad's happening in the leg!!!

② Those bursts are experienced as pain or, depending on their pattern + rhythm, pins & needles, tingling, etc.

Zoom in on the nerve root:

These "ectopic" APs
Come from the root,
but the brain 'thinks' they are from the leg...

Nothing wrong down here in the leg... all quiet...



RADICULOPATHY

If you press on a nerve...

You reduce its blood supply and it stops working!!

Radiculopathy isn't too different...

Pressure +/or inflammation = CONDUCTION BLOCK!

Radiculopathy is:

- Often quite mild, b/c roots share work
- Not a pain condition, technically!

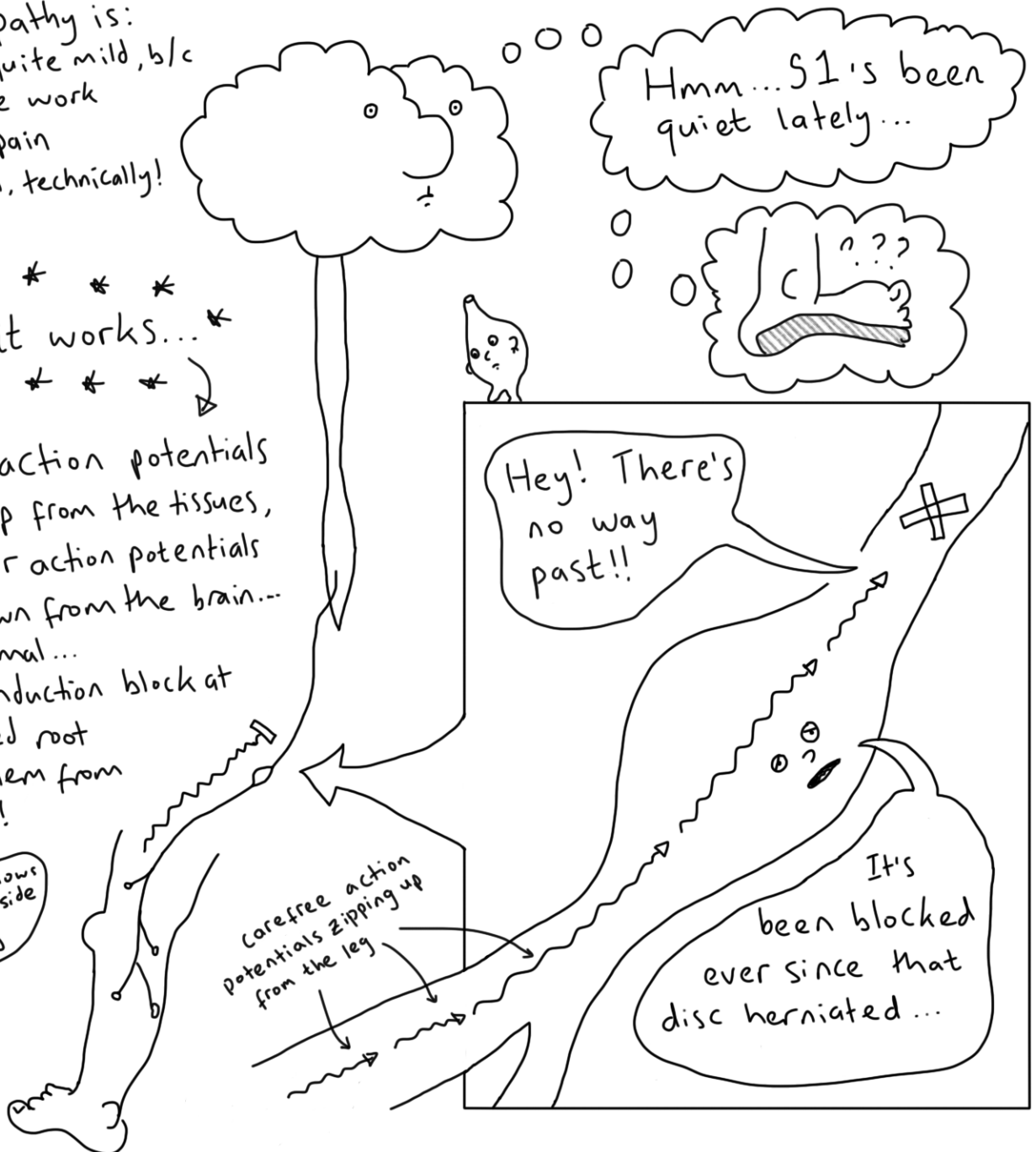
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How it works... *


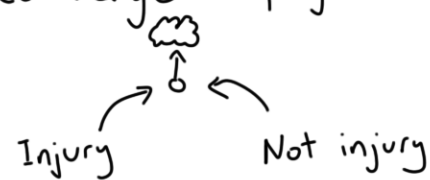

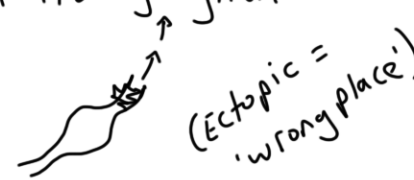

* * * * *

Sensory action potentials travel up from the tissues, and motor action potentials travel down from the brain... like normal... But a conduction block at an injured root stops them from passing!!

Of course, this picture shows the sensory side only



In summary ...

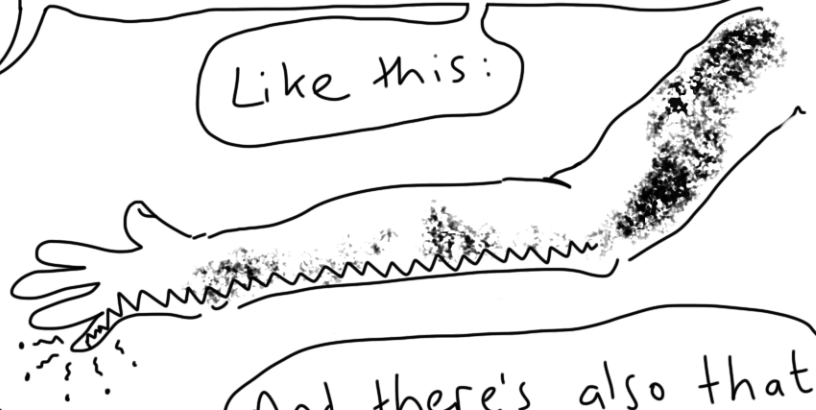
	Symptoms/signs	Mechanism
Referred Pain	Dull, aching, difficult to localize 	"Convergence-projection" 
Radicular Pain	Lancinating, shocking, electrical, often in a dermatome (ish) band, 	"Ectopic" impulses from root +/or ganglion 
Radiculopathy	Objective neuro signs: ↓ reflexes ↓ power ↓ sensation	Conduction block at nerve root 

(What a know-it-all...)



Of course, it's sometimes not that simple. For example, all three often co-occur

Like this:



And radicular pain often deviates from the "expected" dermatome



And there's also that tugging nerve "tightness" called mechanosensitivity..



CAUSES OF RADICULOPATHY RADICULAR PAIN

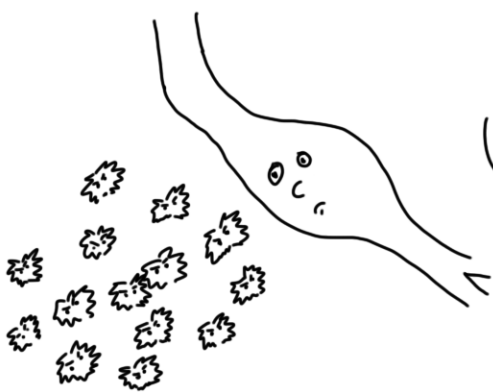


No 1 cause →

Disc herniations

- * Source of pressure on roots
- * Source of inflammation, too (contain nasty chemicals)
- * Frequently asymptomatic if they are e.g. not near root, or occur slowly
- * Resorbed by macrophages over time, especially big herniations

Inflammation from nearby stuff



* E.g. facet joints...

(side view of foramen)



- * Pressure on roots
- * Commonly asymptomatic

Rare but there:

- * Shingles! (esp. thoracic.)
- * Aneurysms
- * Metastatic tumours
- * Benign lumps + bumps

And don't forget cauda equina syndrome. For more on that, see www.theCESbook.com!





To be Continued....?

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