1 # Instrumentation

or finding the @)(*&_&%! Subluxation!

2 ## Objectives

- To obtain objective neurological evidence of the “Vertebral Subluxation Complex” (VSC)
- To monitor progress in patient care

3 ## What are we looking for?

- There is a probable connection between the VSC and neurological phenomenon that we see in examinations with the instruments

4 ## Dr. Gonstead’s Concept:

- His feeling was that temperature variations were due to inflammation from nerve root compression radiating heat to the skin surface

5 ## OR

- radiation of heat from the skin surface to the area of chronic nerve root compression

6 ## Newer data suggests:

- this is unlikely
  - heat on the surface only radiates to 1 - 1.8 mm below the skin
- this most likely is due to some other mechanism

7 ## Other mechanisms

- Changes in heat are usually related to changes in vascularity
- Two primary mechanisms:
  - Substance P release as a result of dorsal sensory nerve stimulation
    - probably released by pain fiber terminals in the dorsal horn
      - generally result of excitation
  - Sympathetic Nervous System Activity
    - This is the more popular theory

8 ## Recent research:

- Seems to show that there are preganglionic sympathetic cell bodies found at all levels of the spinal cord
  - (per Mitchell, Anatomy of the ANS; Randall, Cox, Alexander, Coldwater, Hertzmann: *Journal of Applied Physiology*)

9 ## So, what’s the big deal?

- This means all levels of the spine can be effected by SNS activity, therefore the theory can apply from Occiput to Coccyx

10 ## Theory:

- Recurrent meningeal nerve (sinuvertebral) innervates the capsule, PLL and annulus.
- It has mixed sensory and sympathetic components
- When stimulated: may lead to
  - pain
  - thermal changes

11 ## *Probably many factors involved*

- more studies necessary

12 ## *There aren't as many*

- interconnections between intersegmental nerves supplying the thoracic spine as in the cervicals and lumbars
  - Therefore the temperature differentials may be more directly related to segmental levels in the thoracics

13 ## *Structure of the Scope*

- 2 thermal sensors
- when they are at different temperatures, voltage differential is roughly proportional to temperature differential
  - due to drifting of free electrons from the warmer to the cooler junction

14 ## *Qualitative assessment*

- the instrument can give an objective finding for the temperature variation

15 ## *Use*

- the SCANNING METHOD is used for bilateral temperature comparison
- Thompson uses the PATTERN METHOD
  - Nervo scope vs Thompson computer scope

16 ## *Searching for:*

- an abrupt over and back break
- over one segment

17 ## *The "Break"*

- the amount of break is thought to be proportional to the amount of VSC involvement
  - I.e. acute would produce large variations
  - chronic might produce smaller ones

18 ## *When the break decreases*

- interpreted to mean the aberrant physiology has decreased
- This means we can use the heat differential as one of several parameters of patient progress
  - no break, probably no subluxation

19 ## *Segmental Levels*

- how they respond to the “break”
- (page 96, fig 4.2 in Plaugher)

20 ## *The Holy Graile of subluxation?*

- No, the presence of a temperature differential is not synonymous with the presence of the VSC
  - if no other subluxation findings are present, probably not the level you’re looking for
    - may be hypermobile
  - My have heat changes distal to the spine
    - outside the range of the probes
    - the lack of temperature findings does not absolutely rule out subluxations

21 ## *Reliability*

- Some studies say very good
- Some studies say not so good
- Some more studies are needed

22 ## *When do I use it?*

- Every visit
  - to monitor progress
  - to know when to quit adjusting

23 ## *Procedure*

- Probes must be perpendicular to the skin
  - produces air gaps otherwise

24 ## *Scan upward from about T2 to C0 (occiput)*

25 ## *Scan downward from about T2 to S2*

26 ## *Glide speed*

- should not exceed .5 to 1 cm per second

27 ## *Three scans to make a finding*

- If you find a temperature differential, rescan the area
  - Gonstead required 3 repeated findings to consider that level
  - If the change increases with repeated scans
    - more significant
  - Moles and scars will effect the readings
  - For a scoliosis, follow the curve

28 ## *Problems occur when:*

- Uneven pressure
  - increased friction over one detector
- not enough pressure (air gaps)
  - skin should be slightly cupped around the probes
- Probes set too wide or narrow
- Not repeating the test properly

- Wrong or inconsistent speed

29 ## *Problems (Cont'd)*

- Finding local inflammations or scars
- Loose skin
- marking the wrong level
- marking the recession or backslash
- NOT CENTERED