A study of the thoraco-lumbo-sacral cutaneous nerves with a review of the dermatomes & clinical signs in an AK examination

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Netter’s Traditional dermatome

Levels of principal dermatomes

- **C5**: Clavicles
- **C5, 6, 7**: Lateral parts of upper limbs
- **C8, T1**: Medial sides of upper limbs
- **C6**: Thumb
- **C6, 7, 8**: Hand
- **C8**: Ring and little fingers
- **T4**: Level of nipples

- **T10**: Level of umbilicus
- **T12**: Inguinal or groin regions
- **L1, 2, 3, 4**: Anterior and inner surfaces of lower limbs
- **L2, 3, S1**: Foot
- **L4**: Medial side of great toe
- **S1, 2, L5**: Posterior and outer surfaces of lower limbs
- **S1**: Lateral margin of foot and little toe
- **S2, 3, 4**: Penile
Netter’s Traditional dermatome
Dermatome

- Cutaneous nerves provide sensory information in the form of: acute and dull pain, ticklishness, itchiness & scratch response, twitch and flinging reactions, paresthesia, tingly shooting pain, deep & light pressure or touch, heat and cold sensations.

- They also provide motor supply to the sweat glands and hair follicles.
history

- Dr Lindsay Rowe 1970’s cluneals nerves Sacrum then T12

- Dr Frank Marcellino 1990 would methodologically touch every part of the body – ‘looking for TONE and the lack of tone’

- DD Palmer most favourite adjustments was T12 and T6, he found these by nerve tracing for tone and irritated nerves

- *Cows, sheep and dogs on my farm*
Two groups of study

- *The first collection of data shows* 39% out of 36 patients presented with significant sensitivity of the cluneal nerves.
- *In the other group* 60% out of 58 patients had significant findings in their dermatomes.

This study shows that a great number of patients have sensitive cutaneous nerves.
Getting Correct feedback

• Patients needed training to report what they were sensing

NEW CONCEPT

• pain, tenderness, ticklishness, pins & needles, shooting pain, itchiness or any other sensation

NEW CONCEPT

In the very young we looked for ticklishness or flinching

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Dermatome analysis

- testing by *vigorous light pressure rubbing* over a dermatome

- points to a discrete pathway

- could be a viable tool in developing a diagnostic picture before each treatment

- makes the patient *REALLY* aware of...
### Table 1: Grading scale of sensitivity

<table>
<thead>
<tr>
<th>Scale</th>
<th>Subjective patient descriptors and requirements to meet scale number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No discomfort during the vigorous light pressure rubbing over the <em>dermatome</em></td>
</tr>
<tr>
<td>1</td>
<td>Pressure heavy, deep, stretching</td>
</tr>
<tr>
<td>2</td>
<td>Tender, Ticklish, Itchy.</td>
</tr>
<tr>
<td>3</td>
<td>Painful or extreme ticklishness. The patient will describe the sensation as painful without delay in response.</td>
</tr>
<tr>
<td>4</td>
<td>Any reproducible body reaction to pressure on the corresponding dermatomes along with a sensation of pain, ticklishness etc. Local twitching, or flinching, ‘Remote Twitch’.</td>
</tr>
<tr>
<td>5</td>
<td>Immediate whole body reaction with pain or ticklishness along a cutaneous nerve</td>
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</tbody>
</table>
AK Dermatome analysis using a regional indicator muscle

• spine TL to level of nerve tracing

  then

• Vertebral challenge was always posterior or inferior on the side of the dermatome nerve

  (even if the whole vertebra is anterior)

  often

• Hypertonic posterior inferior serratus or multifidus on same side
AK Dermatome analysis using a regional indicator muscle

Cutaneous nerves that evoke a *grading response of greater than zero* produce a weakness of a regional muscle during stimulation of the nerve.

Stimulation of surrounding area of a sensitive nerve where there is a zero grading, produces no weakness.
Dermatome treatment

4 different mechanical types of impingement

1. Spinal
2. Visceral
3. Muscular

RULE: adjust the segment or manipulate the visceral compression on the same side as the positive nerve tracing

4. Extremity on same side

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1. Dermatome treatment

search for the origin of nerve impingement from within the cord level all the way to the distal end of the cutaneous nerve
1. Dermatome treatment

- Sometimes this treatment seems remote and not on a dermatome, because their nuclei are at a higher level;

- example - Cluneal nerves have their nuclei at T12 but the nerve exit the spine at different levels from L1 through to sacrum

- DD Palmer most frequent adjustment was to T12 for all types of conditions especially buttock and leg pain
Cluneal Nerves

- a group of sensory nerves that relay dermatone information from the buttocks
- their nuclei originate at the level just posterior to body of T12
- superior cluneal nerve exit L1, 2 and 3
- middle and inferior cluneal nerves travel down exit S1, 2 and 3 anterior and posterior sacral foramen
- the inferior cluneal nerve comes off the...
Dr Frank Marcellino: says these nerves can become ‘snagged’ like a fishing line. Our research seems to occur on the posterior / inferior subluxation side
Superior cluneal nerve
2. Dermatome non spinal treatment

At times

- it is at the distal end of a nerve or dermatome such as: inguinal ligament, talus/calcaneus etc
- between muscle bone fascia visceral compression
- with a fluid cyst or
- visceral biomechanical fault

often
2. Dermatome non spinal treatment

Multiple unilateral dermatomes of thigh or leg

*think* distal extremity lesion
2. Dermatome non spinal treatment

- Anterior thigh dermatome think visceral and muscles fascia entrapments
Dermatome non spinal treatment

Multiple bilateral dermatomes is toxic or nutritional deficiency magnesium, folic acid and imbalances sodium- potassium, are common

Insalivation of correct nutrient markedly diminishes sensitivity of multiple dermatomes

Dr David Leaf taught pain change with right nutrient