Stroke Recovery and Rehabilitation: How Acupuncture can help

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Learning Goals for This Lecture

Key therapeutic goals and their timing

1. Early local recovery (*Days 2-8*)
   - Clear inflammation, edema, metabolic waste
   - Promote angiogenesis, neuroplasticity (ongoing)

2. Systemic recovery (*Day 2 onward*)
   - Reduce bowel/bladder dysfunction, disrupted sleep

3. (& 4, 5) Rehab (*inpatient or post discharge*)
   - Speech/swallowing (3), lower limb (4), upper limb (5)

6. Chronic care (*any time, the sooner the better*)
   - Continue previous goals; prevent/slow spasticity
Acupuncture and Stroke Rehabilitation

• In China, stroke rehabilitation (not pain) is the most common indication for acupuncture use¹

• Clinical research has been inconsistent
  – Stroke itself is heterogeneous, difficult to study
  – Acupuncture methodology problems include use of sham needle and fixed point protocols

• Since 2003, used in LMC acute rehab unit
  – Chart review showed happy patients
  – Survey of therapists showed positive opinions

Acupuncture during stroke rehabilitation: developing a manual for researching a complex intervention

PhD study conducted in 3 parts

• Manual development by acupuncture team
  – Literature review: research and clinical literature
  – Iterative cycles of practice, self-study and revision of treatment algorithms

• Feasibility study – quantitative outcomes
  – FIM, Modified Rankin (mRS), sleep, bowel function

• Qualitative study – stakeholder perceptions
  – Patient; family member; Nurse and Physician
  – Physical, Occupational, Speech therapists
Lessons Learned

• Acupuncture during stroke is a complex intervention
  – Standardize algorithms, not procedures
  – Ordered progression through treatment planning

• Studying acupuncture for stroke is still difficult, but feasible in this way
  – Promising outcomes on constipation, sleep
  – mRS is better than FIM; long-term follow-up

• Wide variety of benefits reported by stakeholders
  – Therapeutic goals plus pain, relaxation, mood
  – Motivation, attention during therapy
Goal 1: Early Local Recovery (Days 2-8)

- First priority is to reduce ‘penumbra’
- Cell death proceeds for 7-10 days
- Acupuncture may reduce it by several mechanisms

- Increase blood flow

- Clear edema & metabolic waste, inhibit apoptosis
Initial Treatment Methods (Basic Research)

• Increase peak blood velocity (not pressure)
  – LV-3, LV-4, TH-5, GB-34 (Ratmansky et al.)

• Increase perfusion of ischemic area
  – Du-14, LI-4 (I add local/distal channel points)

• Reduce inflammation, clear metabolic waste, inhibit apoptosis
  – ST-36, LI-11, Du-14, 20, 26 (these points also increase new cell growth & neuroplasticity)

• Promote angiogenesis
  – LI-4
Global Model: Chavez et al.

Promotion of cell proliferation in CNS
- Cell proliferation in ischemic tissue

Regulation of cerebral blood flow
- Vasoactive modulation

Anti-apoptosis
- Specific apoptotic pathways
- Non-specific apoptotic pathways

Regulation of neurochemicals
- Neurotransmitters and receptors
- Antioxidant enzymes
- Inflammatory mediators
- Neurotrophic factors
- Anaerobic metabolism

Promotion of cell proliferation in CNS
- Neurogenesis

Regulation of cerebral blood flow
- Angiogenesis

LTP and memory improvement

Ischemic tissue
Specific effect area
Healthy tissue
Initial Treatment Methods (TCM)

• Raise the Clear Yang
  – Du-20, Du-24 (can E-stim); Du-16 (caution); Yintang

• Descend the Turbid
  – LI-4 &11 (constipation, phlegm-heat)
  – SP-9 (damp), ST-40, PC-5 (phlegm)

• ‘Xing Nao Kai Qiao’ method
  – SP-6, PC-6, Du-26

• Also consider channel pathways to head
Territories of the 3 Main Vessels

- **ACA**
  - Urinary Bladder

- **MCA**
  - Gall Bladder, Liver

- **PCA**
  - Du, Ren, Kidney, Urinary Bladder
Goal 2: Systemic Recovery (Day 2 onward)

• Unless stroke is mild, ‘Qi machine’ is impaired
  – Bowel stroke – constipation, urinary retention
  – Viscera (Heart) stroke – incontinence, aphasia
• Sleep pattern often follows bowels
  – Incontinence -> somnolence
  – Constipation -> insomnia, disrupted sleep/wake cycle
Treatment Methods
(also treat constitution – next slide)

• Incontinence
  – Warming therapies: heating pads, foot soaks
  – Electrical stimulation KD-7 to KD-7, 10hz mild

• Constipation
  – Circulate Qi and fluids using Balance method, including ST-36, LI-4 and 11, LU-7, SP-3
  – Abdominal round rubbing, auriculotherapy
  – If refractory, ST-26 to ST-26 E-stim

• Urinary retention
  – Electrical stimulation KD-7 to KD-7, 10hz mild
  – Ren-3, 5 and 9, LU-7
**Additional Constitutional Factors**

- **Atherosclerosis** = phlegm + blood stasis
  - Usually presents with hyperlipidemia and/or diabetes
  - Vessel damage from hypertension is blood stasis
  - Thrombotic stroke reflects *systemic* clogging
- **Common CM etiologies include:**
  - Phlegm heat with Liver Qi
  - Liver yang rising with yin or Blood xu
  - Phlegm damp +/- obesity, edema, cardiac problems
- **Lacunar stroke** – deep vessels of MCA
  - Common with smoking -> blood heat/dryness
- **Hemorrhagic stroke**
  - Differentiate Liver excess or Yang rising from Qi/Jing deficiency
Stroke Tongues 3, 4
Stroke Tongue 5 (baseline/2wks)
Goals 3, 4, 5: Rehabilitation

Planning treatment during rehabilitation, it’s important to prioritize

3. Speech and swallowing are most critical
   - Speech in particular rules quality of life and effectiveness of other rehab therapy

4. Lower extremity comes before upper
   - Start with balance and trunk stability
   - Healing generally proceeds from proximal to distal

5. Upper Extremity is often slower to come back
   - Shoulder may sublux causing severe pain
Jiao Scalp Acupuncture
Zhu System – Body Areas
Zhu System – Shoulder/Hip
3. Core Treatment for Speech/Swallowing

• This treatment is from the Zhen Jiu Da Cheng (1601). It combines well with other approaches.
  – Although I have explored many techniques for both speech and swallowing, I have never had more consistent results with anything else.

• GB-12, GB-20 (can thread)
  – TH-17 (can omit; or warn patient it will ache after)

• Ren-23, OUTER jinjin-yuye
  – Nervy clefts outside Ren-23, needled towards base of tongue

• Add KD-6, HT-5 (if aphasia)
4. Lower Extremity Rehabilitation

• If limb is completely flaccid, open it
  – GB-30, UB-40, Zhu hip line (ipsilateral)
  – Coach patient on inhaling deeply into the area

• Lead progress from proximal to distal
  – Hip flexors – SP-3.2 (proximal to the joint), LV-7
  – Vastus medialis – E-stim ST-31 to SP-10
  – Dorsiflexion – E-stim 2 leads, 2hz
    • Lead 1 – contralateral Jiao leg motor line
    • Lead 2 – ST-36 and ST-38, in the belly of tibialis anterior to make it twitch visibly
**Leg Balance for MCA Stroke**
(plus Du20/24, leg motor area Left side)

- **Right Arm (3rd)**
  - Choose among LU-3, 5, 7, 9
  - PC-6, PC-5 (phlegm), HT-5 (speech), etc.

- **Right Leg (Affected Side, needle 1st)**
  - ST-31/36/41
  - Can add ba feng or dorsiflexion E-stim

- **Left Arm (lesion side, needle 2nd)**
  - LI-4/11 or 10 (weakness)
  - TH-6 (constipation)

- **Left leg (4th)**
  - SP-6, LV-8
  - KD or other points by constitution
5. Upper Extremity Rehabilitation

• This is much more difficult in MCA stroke, and may not return at all
  – No movement by 30 days is concerning
  – However it is always worth trying E-stim 3 times
• Return is less orderly than leg, may jump to hand
  – Starts with shoulder elevation, protraction/retraction
  – To open the arm: HT-1 (from jian qian), LU-5
• Wrist extension (and motor return), 2 leads:
  – Lead 1 – contralateral Jiao motor line
  – Lead 2 – needle Ba Xie and TH-5, stimulate 5 minutes each hand point to twitch (as for dorsiflexion)
Arm Balance for MCA Stroke (plus Du20/24, arm motor area Left side)

- **Right Arm (Affected Side, needle 1st)**
  - LI4/11/15, TH6
  - Can add ba xie with motor line

- **Right Leg (3rd)**
  - SP6/10
  - SP6 deep/strong for blood stasis

- **Left arm (4th)**
  - PC5/6

- **Left Leg (lesion side, needle 2nd)**
  - ST36/40, GB34/40

- **Other points as constitutionally appropriate**
Goal 6, Chronic Care

• Acupuncture can be phenomenally helpful in preserving quality of life post stroke
  – Also important is preventing secondary stroke!
• Challenges include:
  – Spasticity – begins approximately 4 weeks
  – Constipation, particularly if on thick liquids
  – Depression, also anxiety, insomnia
  – All functional and constitutional considerations previously discussed
• Assess and prioritize based on severity, patient preference
Treatment Approaches

• Spasticity is more easily prevented than treated
  – If severe, botox or baclofen may provide relief
  – Some tone is useful however
• Fascia themselves stiffen up, pull flexors tight
  – Open and nourish affected channels with local/adjacent/distal strategies; teach family simple massage
  – Tui na, soaks, ear seeds, Zhu microsystem
• Depression/Anxiety
  – These are so prevalent as to be part of the disease
  – Treatment is to rebalance constitution, raise and circulate Qi, encourage exercise, foot baths, etc.
Considerations for Practice

• Patients require longer to get set up
  – If in wheelchair, consider treating there
• 2-3 sessions per week is much better
  – Can set a treatment plan and repeat or reverse it
• Prevention is critical!
  – Hypertension, diabetes, cholesterol, smoking, exercise, diet are all factors we can help with – also poor sleep and constipation
Questions???