

# OVERVIEW OF TCM PEDIATRIC PATHOPHYSIOLOGY AND DIAGNOSIS

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*The following is an outline summation of Part One from ESSENTIALS OF TRADITIONAL CHINESE PEDIATRICS, Foreign Language Press, Beijing, 1990. It is reinforced with material from Part II: Diagnosis of Infantile Patients, found in INFANTILE TUINA THERAPY, Luan Changye, Foreign Language Press, Beijing, 1989.*

## 1. PHYSIOLOGY OF INFANTS AND CHILDREN IN TRADITIONAL CHINESE MEDICINE

### A. CLASSICAL OBSERVATIONS OF PEDIATRIC PHYSIOLOGY

1. "Children's spleen is often insufficient".
2. "Liver often has illness".
3. "Children's *yin* is often insufficient".
4. "*Zang-fu* are soft, and the *qi* easily loses its *dao* (path)".
5. "Children get illness easily, illness easily becomes serious".
6. "*Zang, Qi, Jing, Shen* - easily ill, easily cured".

### B. PHYSIOLOGY AND PATHOGENIC ETIOLOGY OF INFANTS

#### 1. PHYSIOLOGICAL CHARACTERISTICS

##### a. DEFICIENCY OF ZANG-FU AND IMMATURITY OF THE BODY

1. Classical text: "Soft body build, insufficient *qi* and blood, unformed tendons and blood vessels, unevolved spirit, immature essential *qi* of the internal organs, and weak body resistance." (Quoted in Essentials of Traditional Chinese Pediatrics).
  - a. The lung and spleen are particularly vulnerable
  - b. Strength of lung *qi* relies on strength of spleen *qi*.

1. This includes immune system
2. “A child’s lung is often insufficient.”
3. A healthy infant cries often during the day to exercise its lungs, stomach and intestines, allowing normal digestion
2. Normal spleen function implies sufficient source of *qi* and blood, rich muscles, and vigorous growth of the body.
  - a. Spleen function is easily overburdened, and insufficient.
3. “*Yang* is insufficient, and *yin* is not fully produced.”
  - a. Also, “Immature yin and immature yang.”
    1. *Yin* = *Jing*, blood, fluid
    2. *Yang* = functional ability of internal organs
    3. “*Yang* is insufficient, and *yin* is not fully produced.”
4. Constitution is delicate
  - a. Organs lack abundant *qi*, blood and organ *jing*.
  - b. Not strong enough to fend off invasion of pathogenic factors.
5. After six months, common to have fever with loss of appetite, diarrhea, vomiting, fright, etc.
  - a. This may be normal, and not be due to pathogenic factors.
  - b. Signs will disappear without medicine after several days

#### c. VITALITY AND RAPID GROWTH

1. Children grow rapidly and vigorously.
  - a. The younger they are, the stronger and more rapid the growth
    1. A one year old is 2.5 times as tall as a newborn, while a two year old is only 2.7 times as tall.
    2. At one year, 3 times as heavy as a newborn, and a two, only 4 times as heavy.
    3. By age 1, they can turn, sit, crawl stand and then walk.
  - b. This is why classics said they have “pure yang” disposition
    1. This does not mean absence of *yin*
  - c. Children grow and develop vigorously despite having immature *yang* and *yin*.

2. Constitutional factors or malnutrition can lead to delayed development
  - a. Delayed: closure of fontanel, walking, standing, hair growth, tooth eruption, speech
  - b. Soft muscle tone of head, neck, mouth
  - c. Susceptibility to childhood illnesses: measles, pertussis, convulsions

### 3. PATHOLOGICAL CHARACTERISTICS

- a. Susceptibility to illness, which develop and change rapidly.
  1. Susceptibility to six pathogenic factors: wind, cold, summer-heat, damp, dryness, fire
  2. Susceptible to problems due to overeating
- b. Due to weakness of zang-fu and immaturity of body and its functions
- c. The younger children are, the more this is obvious
- d. “The nature of children’s diseases is liable to change from deficiency to excess and from cold to heat, and vice versa.”
- e. Most susceptible to spleen, lung and seasonal disorders.
  1. Easy to develop bronchitis, cough, pneumonia, asthma

### 4. SPLEEN AND STOMACH DISORDERS

- a. *Zang-Fu* Function
  1. Stomach receives and digests food
  2. Spleen dominates transformation and transportation of food
    - a. Distributes food essence to various parts of body
    - b. Allows creation and distribution of *qi* and blood
- b. Spleen and stomach are weak, but the body requires large amounts of food for development
- c. Susceptible to exogenous pathogenic factors
  1. Due to improper feeding
    - a. Over eating
    - b. Cold foods

- c. Rich foods: fatty, sugary
  - 1. Includes dairy
  - 2. Due to inappropriate clothing: too warm or not enough
  - 3. Leads to food retention, vomiting, diarrhea, malnutrition, anorexia.
    - a. *Yin* and *Yang* easily injured by each other
      - 1. Infantile diarrhea often due to excess damp-heat, but this easily transforms into depletion of *yin*, due to diarrhea
      - 2. Restriction of spleen *yang* by excess dampness, or by loss of fluids in diarrhea affecting spleen *qi*, then *yang*.
  - 4. Poor digestion can lead to phlegm, causing runny stools, colic, colds, runny nose, earaches
- d. Causes of poor digestion:
  - 1. Over eating or over filling, including breast milk
  - 2. If food too hot: depletes *yin*, allows rising of liver *yang* or fire
  - 3. Too cold: injures middle *jiao* fire
    - a. Undercooked: depletes stomach fire
    - 4. Production and accumulation of phlegm
      - a. Unrefined: incomplete digestion » phlegm
      - b. Overcooked: depletes *qi* of food » phlegm
      - c. Too many foods: phlegm
      - d. Cow's milk: phlegm
      - e. Sugar: phlegm, and over stimulates *shen*
- e. The middle *jiao* borrows *yang* from the kidneys to separate pure from impure
  - 1. Accumulation of phlegm » impaired lungs + deficient kidney » deficient *wei qi* » susceptibility to exogenous pathogens.

## 5. OTHER PATHOLOGICAL CONSIDERATIONS

- a. Exogenous pathogenic factors
  - 1. Wind, Cold, Dryness, Heat, Summer-heat, Damp
- b. Pathogenic factors not completely cleared
  - 1. Phlegm: lungs, sinus

- 2. Lymph: tonsils, glands
- 3. Heat: mouth ulcers, diarrhea, constipation, insomnia, irritability
- 4. Vaccinations: chronic lymph congestion, insomnia, hyperactivity
- c. Diet: Malnourishment, too much food, irregular feeding, cow's milk, early weaning, late weaning, whole complex foods, hot or cold energy foods.
- d. Lifestyle: Not enough fresh air and exercise, not enough sleep, over stimulation, lack of routine and discipline
- e. Poisons: Food poisoning, Food additives, Second-hand smoke, Intestinal toxins (following antibiotics), Vaccinations, Environmental toxins (fiberglass, lead, asbestos, chemicals), Electromagnetic stress
- f. Constitutional factors: *Before pregnancy*: health of mother, health of father, attitude during conception. *During pregnancy*: uterine diseases, uterine heat, uterine poison, shock in utero, birth trauma. *After birth*: over anxiety, lack of love from parents

## 6. QUICK RECOVERY

- a. Children's diseases develop and change rapidly, but the pure *yang* disposition allows strong ability of recovery.
  - 1. Sick babies recover much more quickly than adults
- b. Etiological factors are simple (pathogens, temperature, etc); not complex with emotional factors.
  - 1. Combinations of several diseases are seldom seen
  - 2. Children respond to herbal medicines quickly
  - 3. *jing yue quan shu*, Collected Treatises of (Zhang) Jing-Yue, 1624: "Children with clean *zang qi* respond to treatment efficiently, if it's underlying cause is recognized."

## FOUR DIAGNOSTIC METHODS

### B. INSPECTION

#### 1. EXPRESSION

- a. Good: active with strong spirit, bright eyes, rosy expression, loud clear voice, normal breathing, normal urine and stool
- b. Vitality
  - 1. Good vitality: is a sign of healthy child with ability or quick recovery
  - 2. Poor vitality: dull eyes, haggard look, abnormal breath, constant diarrhea, weight loss or failure to gain, inactive

#### 2. COMPLEXION

- a. Pale = cold or deficiency
  - 1. Puffy = yang deficiency with excess damp (Yin edema)
  - 3. Pale lips = deficiency of blood
  - 4. With perspiration = weak lung *qi* or *wei qi*
  - 5. Pale with some rosy = normal health
- b. Reddish = heat syndromes
  - 1. Light red at birth = normal. Will subside in 2-3 days.
- c. Yellowish = weak body type or retention of damp
  - 1. With swollen belly but emaciation = infantile malnutrition.
- d. Bluish-purple = stagnation of blood or cold
  - 1. Purple lips with shortness of breath = blockage of lung *qi*
- e. In general, and on yin area of arms or legs:
  - 1. Bluish = liver
  - 2. Reddish = heart
  - 3. Yellowish = spleen
  - 4. Pale = lungs
  - 5. Dark = kidney

### 3. APPEARANCE AND BODY MOVEMENT

- a. Look at head, hair, chest, trunk, limbs and nails
- b. Normal = strong body and bones, active motion
- c. Poor = weak and thin muscles, soft bones, dry skin, withered hair fontanel failing to close, dull expression
- d. Withered hair that falls out = extreme deficiency of *qi* and blood
- e. Purple nails or clubbed fingers = deficiency of heart *yang*
- f. Movement
  1. Normal = free in motion without discomfort
  2. Likes to sleep on belly = food or milk retention
  3. Sleeping on back without motion = prolonged or serious illness
  4. Holding belly and crying = acute abdominal pain
  5. Neck rigidity = infantile convulsions
- g. Overactive by day, quiet at night = yang excess
- h. Quiet during the day, active at night = yin excess

### 4. BREATHING

- a. Coarse quick breathing = excess pathogenic factors
- b. Faint slow breathing = deficient *qi* or *jing*
- c. Shortness of breath, then abdominal distension = lung
- d. Abdominal distension, then shortness of breath = spleen

### 5. OBSERVING BODY PARTS

#### a. TONGUE

1. Normal = light-red in color free of motion, moist
  - a. Milky-white coat in nursing infants is normal
2. Pale = deficiency of *qi* and blood, anemia
3. Deep-red = invasion of *ying* and *xue* by pathogenic heat
  - a. Severe cases of acute febrile disease
4. Purple = stagnation of *qi* and blood, anorexia
5. Sticky white coat = cold and damp in interior of body
6. Sticky yellow coat = damp-heat or turbid-damp in middle *jiao*

7. Sticky yellow dirty coat = retention of milk or food
8. Dry peeling coat = consumption of fluid and deficiency of *yin*
9. Geographic = weak spleen, dyspepsia

**b. EYE**

1. Normal = Eyes have a sparkle
2. Unhealthy = expressionless or closed
3. Red sclera = exposure to wind-heat, or liver heat
4. Watery = early sign of viral disease or severe common cold
5. Yellow = jaundice due to damp heat in interior
6. Black spots (sesame size) = intestinal parasites
7. Dilated or shrunken pupils = exhaustion of kidney qi
8. Staring with fixed pupils = exhaustion of liver
9. Dull, yellow, or small pupils = prolonged illness that are difficult to cure

**c. NOSE**

1. Obstruction with watery discharge = common cold due to wind-cold
2. Red and runny = exogenous wind-heat
3. Obstruction with thick discharge = common cold due to wind-heat
4. Long standing thick nasal discharge = lung heat
5. Dry and irritated = dryness and heat in the lung
6. Epistaxis (nosebleed) heat in the lung channel
7. Flaring of nostril, with emphasis on inhalation = exhaustion of lung

**d. MOUTH & LIPS**

1. Red swollen gums with erosion = stomach fire
2. Inflamed throat and/or swollen tonsils = heat in stomach and lung
3. Yellow-white membrane = tonsillitis
4. Ulcers on mouth or tongue = heat in heart and spleen
5. White growth on throat or tongue = thrush
6. Saliva on corners of mouth = cold spleen



7. Dried cracked corners of mouth or cracked lips = internal heat
8. Red swollen lips = excess heat
9. Dark red lips = heat in heart or spleen
10. Pale lips = deficiency of spleen or blood
11. Bluish lips = liver stagnation or cold
12. Red lips with vomiting = stomach heat
13. Pale lips and vomiting = stomach deficiency

**e. TEETH**

1. Failure of teeth to grow = deficiency of kidney *qi*

**f. EAR**

1. Ear canal pain with discharge = wind-fire of liver-gallbladder
2. Ear lobe swelling = wind-heat toxins in Gallbladder (mumps)
3. Red = normal. Means abundant kidney energy.
  - a. If red and hot = exogenous wind

**g. GENITALIA**

1. Flaccid scrotum = deficiency of kidney *qi*
2. Enlarged or dropping scrotum = hernia due to deficiency of middle *jiao*
3. Red moist labia = damp-heat in lower *jiao*

**h. STOOL**

1. Normal = newborns have loose stool with frequency
2. Normal = toddlers have yellow stool, neither too dry nor too moist
  - a. Changes in normal can mean illness
3. Dry and small = heat retention in intestines
4. Loose with food or bad smell = excess food intake with fermentation
5. Loose stool without bad smell = deficiency
6. Watery stool = cold in interior
7. Watery diarrhea with mucus and anal redness = heat or toxins
8. Diarrhea with scant urine = internal heat

9. Blood, soy sauce color with crying in infants = intestinal obstruction
10. Constipation = check pulse to see if stagnation of cold or heat
11. Constipation with belching and abdominal distension = food stagnation

**i. URINE**

1. Normal = clear and light-yellow
2. Scanty and deep yellow = in hot summer is normal
3. Frequent and painful = damp-heat
4. Turbid, milky = food stagnation
5. Deep red or brown = hematuria
6. Brown = heat
7. Light urine following fever = condition is improving
8. Pale urine = cold
9. Enuresis or frequent urination = deficiency of *yang* or *jing*

**j. HANDS AND FEET**

1. Bluish fingernails = heart blood stagnation
2. Blackish fingernails = liver stagnation, or deficiency of liver blood

**k. CAPILLARY VESSEL OF INDEX FINGER**

1. Useful when under two years of age
  - a. Observe radial side of palmar aspect of finger
  - b. Proximal = wind-gate
  - c. Middle = *qi* gate
  - d. Distal = vital gate
2. Normal = capillary is red tinged with yellow, and unexposed at wind-gate
  - a. Massage proximally to facilitate capillary observation
3. Superficial, exposed, easy to see = exterior syndromes
4. Deep and indistinct = interior syndromes
5. Light red = cold or deficiency syndromes
6. Bright red = exogenous heat

7. Blue-purple = stagnation of blood or cold; occasionally, internal heat
8. Three gates determine severity
  - a. Visible at wind-gate = recent and mild illness
  - b. Seen at wind-gate and *qi* gate = pathogenic factors penetrating more deeply
  - c. All 3 gates = a critical condition

## C. LISTENING AND SMELLING

### 1. LISTENING

#### a. CRYING

1. Crying for a long time and sucking fingers or suckling = hunger
2. Shouting in high pitched voice = abdominal pain
3. Strong voice crying = excess condition
4. Weak voice crying = deficiency
5. Crying with profuse tears = deficiency

#### b. BREATHING

1. Shortness of breath, gurgling with sputum in the throat = accumulated phlegm blocking the lung
2. Asthma = raised shoulders, dyspnea, restlessness
3. Sore throat = hoarse voice, dark lips

#### c. COUGH

1. Coarse voice, nasal sputum = wind-cold into lungs
2. Yellow phlegm out nares = phlegm heat
3. Chronic hoarse voice = deficiency of lung yin

#### d. SPEECH

1. Normal = clear and loud
2. Feeble voice in low tones = deficiency
3. Shouting in high pitch = violent pain
4. Incoherent babbling with high fever = *ying-xue* fire
5. Feeble voice that gets louder = internal injury

**e. ORGAN DIFFERENTIATION**

1. Shortness of breath or asthma = lung
2. Shouting or scolding = liver
3. Trembling sound = spleen
4. Feeble voice = kidney
5. Giggling, or flat affect in speech – heart

**f. PAIN DIFFERENTIATION**

1. Frowning or groaning = headache
2. Loud groaning and touching chest or belly = stomach ache
3. Groaning, touching cheeks = toothache
4. Groaning and failing to stand = low back pain

**2. SMELLS**

- a. Foul breath with mouth or gum ulcers = stomach heat
- b. Acidic foul breath = mouth sores, stomach heat
- c. Putrid smell = sinus infection
- d. Rotten fish smell = cold in interior
- e. Belching with acid regurgitation, smelly stools = food or milk stagnation
- f. Foul brown urine = bladder heat
- g. Foul clear urine = cold in bladder

## D. INQUIRING (Patient or parent)

### 1. AGE

- a. Infants should use cold bitter herbs with caution
- b. Current illness: history, location, nature

### 2. CHILLS AND FEVER

- a. Babies with chills will cuddle close to mother, or stay curled up
  - 1. Follow same guidelines as adults re: wind-heat, wind-cold, internal
    - a. Wind-heat fever has fever
    - b. Wind-cold fever has fever and chills
    - c. High fever, constipation, occasionally convulsions = internal heat

### 3. PERSPIRATION

- a. Babies may perspire on forehead during sleeping = normal
- b. Sweating without exertion = deficiency of *qi*
- c. Nightsweats = deficiency of *yin*, or *qi* and *yin*

### 4. HEAD AND BODY

- a. Older children can complain of headache
  - 1. Often present in fever, which is exogenous
  - 2. With abdominal pain, diarrhea or cold limbs = cold in interior
- b. Chest and abdomen
  - 1. Chest pain with cough = pathogenic heat into lungs
  - 2. Abdominal fullness or distension = food retention
  - 3. Pain around umbilicus = parasites

## 5. APPETITE, HUNGER, ABDOMINAL DISTENSION

- a. Excessive eating and bowel movements with emaciation = infantile malnutrition
- b. Poor appetite with abdominal fullness or distension = excessive intake or milk or food
- c. Hunger with weight loss = stomach fire
- d. Good appetite but abdominal distension = normal stomach, spleen deficiency
- e. Abdominal distension after eating = food stagnation
- f. Stomachache relieve by eating = deficiency
- g. Stomachache worse after eating = excess
- h. Preference for hot food = internal cold
- i. Preference for cold food = internal heat

## 6. THIRST

- a. Extreme thirst, preference for cold = interior heat
- b. Dry mouth, no desire for fluid = deficiency of *yin*

## 7. PERSONAL HISTORY

- a. Ask about pregnancy, labor, development issues, feeding habits, diet, fears and fright, sleep patterns, history of infectious diseases and illness, adverse reactions to treatment.
- b. Older children – diet and food preferences, developmental stages (sitting, crawling, walking, speaking), vaccinations and any reactions.

## E. PALPATION

### 1. PULSE

- a. "Use one finger to determine the conditions of the three regions of the pulse".
- b. Children's pulse is less significant than adult's.
  1. Normal = more rapid.
    - a. Crying or nursing makes it even more rapid
    - b. Best to feel the pulse when sleeping.
- c. Six main pulses:
  1. Superficial – deep
  2. Rapid – slow
  3. Forceful - weak
- d. Interpretation:
  1. Superficial – forceful = pathogenic exterior syndrome
  2. Superficial – weak = exterior deficiency syndrome
  3. Deep – forceful = interior excess type
  4. Deep – weak = interior deficiency type
  5. Slow = cold syndrome (slow-excess; slow-weak)
  6. Rapid = heat conditions (rapid-excess; rapid-weak)
- e. Normal rates:
  1. Newborn: 120-140 per minute (30-35/15 seconds)
  2. One year: 110-120 per minute (27-20/15 seconds)
  3. Four year old: 110 per minute (27-28/15 seconds)
  4. Eight year old: 90 per minute (22-23/15 second)
  5. Fourteen years: 75-80 per minute (18-20/15 second)
- f. Other pediatric pulses:
  1. Wide = abdominal pain
  2. Rolling/slippery = phlegm heat or food retention
  3. Weak-floating = deficiency of qi and blood or invasion of pathogenic damp

## 2. PALPATING THE BODY

### a. SKIN

1. Cold skin with perspiration = deficiency of *yang* or *wei qi*
2. Hot skin without perspiration = invasion of pathogenic heat
3. Swollen skin with pitting = edema due to retention of damp
4. Pitting that disappears when released = pathogenic wind in lung impairing water circulation
5. Dry skin with impaired elasticity = dehydration

### b. HEAD AND NECK

1. Babies under 12-18 months may have normal concave head because fontanel has not completely closed
  - a. After this, open fontanel means deficiency of kidney *qi*
  - b. Fontanel may raise during acute fever
2. Painful lymph nodes in neck = phlegm toxins

### c. ABDOMEN

1. Should be soft, tender and warm
2. Too soft = deficiency
3. Too hard = excess, or pain
4. Distended but soft = gas
5. Distended but tense = fluid

### d. FOUR LIMBS

1. Chronic cold limbs = *yang* deficiency
2. High fever with cold limbs = “The deeper heat goes to the interior, the colder the limbs”
3. Trembling or contracture = infantile convulsion
4. Pitting after pressing skin = edema, water retention



## 2. PRESCRIBING HERBS FOR CHILDREN

### a. BASIC CONCEPTS

#### 1. TREATMENT STOPS IN THE MIDDLE STAGE

- a. Children are sensitive. For herbs that are excessive in taste, temperature or activation, discontinue once condition begins to improve.
- b. Prolonged use of bitter or cold herbs can damage *yang qi*
- c. Prolonged use of spicy or hot herbs can injure *yin* fluid.
- d. Prolonged use of wind eliminating herbs can damage *qi* of the middle *jiao*
- e. Prolonged use of tonics can cause stagnation of stomach *qi*

#### 2. SUITABLE USE OF HERBS

- a. Decoction or pills made into liquid is most easily absorbed
- b. Pills are suitable for children who can swallow them

#### 3. DOSAGE FOR CHILDREN

- a. Duration of treatment is as short as possible.
- b. In decoction, children will only take small amounts, so give more frequently
- c. Dose for decoction can be strong, because of smaller amounts taken
- d. Use smaller percentages for spicy, hot, cold or bitter herbs
- e. Dosage if by decoction or pills:
  1. Newborns: 1/6 adult dosage
  2. Babies: 1/3 – 1/2
  3. Young children: 1/2 - 2/3
  4. School children – same as adults

#### 4. METHODS OF ADMINISTRATION

- a. Oral administration of decoction, pills or powder
  1. Minimize total liquid amount
  2. In babies, fix head and hands, and apply to root of tongue. Baby will swallow naturally. Give in small amounts in intervals.
  3. Sugar or sweetener can be added for taste.
  4. Older children need patient examination until they agree
  5. Pills and tablets can be ground into a powder, mixed with sugar water
- b. Other methods: nasal, rectal and injection

# INSTRUCTIONS FOR ADMINISTERING CHILDREN HERBAL MEDICINES

You will be given Chinese herbs in a powder.

## \_\_\_\_\_ **Method 1:**

Take one-half to one teaspoon of powder. Add a small amount of boiling water, enough to make a dark liquid: not too watery, not thick or pasty. Strain through a metal mesh strainer. This should make 3 to 6 teaspoons of final liquid.

Give \_\_\_\_\_ ml/cc as a dosage. Give \_\_\_\_\_ teaspoon.

\_\_\_\_\_ Give by pediatric syringe.

\_\_\_\_\_ Give by teaspoon or in a cup to drink.

## \_\_\_\_\_ **Method 2:**

Mix dosage (1/4 to 1/5 tsp) of powder with apple sauce, yogurt, rice pudding, etc. Make sure that your child consumes all.

Give \_\_\_\_\_ teaspoon of powder.

**Give every \_\_\_\_\_ hours, or \_\_\_\_\_ times per day.**

\_\_\_\_\_ Until symptoms are gone.

\_\_\_\_\_ Until bottle is empty.

Infants: 1-2 ml/cc

1 to 2 years: 2-3 ml/cc

2 to 3 years: 3-4 ml/cc

3 to 5 years: 4-5 ml/cc

Above 5 years: 6 ml/cc or one teaspoon