Seminar 1
Main rules of infant and child examination

Main rules

The aims and objectives should be:

H=history

E=examination

L=logical deduction

P=plan of management

- The cornerstone of clinical practice is to take interview from patient and perform a physical examination.
- Proper choose and interpretation of the laboratory tests

Guidelines on examining pediatric patients

A keen observation of the child from the beginning to the end of the consultation

Spend a little time winning the child's confidence by starting on friendly terms

Wash hands before and after examining the patient

Examine the child on the examining table or on a position that suits the child

In an infant remove all clothing but in adolescents a thorough examination should be conducted with due respect to the patient's privacy

Interview structure

1. Personal data
2. Developmental skills- watch the child play to asses development
3. Family history
4. Living conditions
5. Medical history, treatment, vaccinations
6. The main problem

Interview

On the interview basis we create

- The ideas about health and disease
- The life condition of the child in which it develops and educates

- Gathering of information should take at least 30 min in comfortable conditions
- Introduce to parents!!!
- Read referral letter and notes before interview
- Observe the child at play- it may provide clues

Interview

- Know/ask for the patients name when you welcome the family and the patient.
- Ask how he prefers to be addressed
- Determine the relationship between the adult and child
- Infants are most secure in parents lap or arms.
- Older children might need some time to get to know you
- DON’T RUSH!

Interview

In emergency situation (life threating conditions) is possible to withdraw the interview.

Only in exceptional cases (educational problems, attempts to "S" in older children), interview is carried out without the presence of the patient.

- Infant - a breastfeeding mother - note of the frequency of feedings, determine her nutrition and health
- Determine who directly care of the child, addictions in the family
- Older child - progress at school (learning difficulties)
- When a child is brought up in difficult social and living conditions, get in touch with a his outpatient clinic and a department of family support (in the hospital)

Symptoms

The chronology of the symptoms

Type symptom (e.g. shortness of breath inspiratory / expiratory / mixed);

Frequency and timing of the symptom

Correct interpretation of the information (e.g. differentiation-convulsions, muscle tremors, chills during fever)

Note the negative symptoms (e.g. no fever with a cold, no diarrhea, stomach ache, lack of pathological components stool with eating disorders)

Some dysmorphic features in child - look at both parents

Infectious diseases - determine when and where the disease was confirmed

During a stay on hospital ward the parent constant contact with a sick child have to be provided

Pediatric patient

- Information from parent is the main key…

- Parents are astute observers, listen to what they say....

Examining patients
4 developmental levels

Infancy- (0-2 yrs- newborn)

Preschool-(2-5 yrs)

School-age-(5-10 yrs)

Adolescent-(>10 yrs)

Examine the comfortable, light room, at the appropriate temperature

Wash your hands and warm; warm handset stethoscope

Infant should be examined completely dismantled (in the presence of his mother); an older child to undress in stages to assess nutritional status, body proportions, skin appearance.

Crying baby examine in the position and location on which allow the current circumstances (on mother knees or hands)

The most difficult elements of the physical examination (throat, anthropometry, measurement of BP, ear examination, rectal examination) is performed at the last stage

In certain clinical situations (child unconscious, hyperactive) examine organs and systems which are available

During the urogenital examination or evaluation of puberty (in older children) always take into account the shame or embarrassment of child

Do not speak loudly when the child is listening (e.g. proposition to stay at hospital, need for blood tests)

Discuss with parents the results of physical examination and give an initial diagnosis

Methods of physical examination

- Measurements
- Inspection
- Percussion
- Auscultation

Measurement

Assessment of somatic development, organ and systemic capacity.

Measurement: weight, length (height); body temperature, respiration rate, heart rate, BP

In children <2yr .: head circumference and chest, large fontanelle and abdominal circumference

other e.g .: crown-rump lenght, width of the pelvis, leg length

Weight

The child should be weighed: once a month in the first half of life

every 3 months during the second half of the year

2 times a year for the next three years

1 time a year later

Child eutrophic: b.w. between the 10th and 90th percentile for age and sex

Child hipotrofic: b.w. below 10 c

Child hypertrophic: b.w. above 90.c

Height

Infant height- assess by using tape or measuring board in the supine position - the distance between the top of the head and foot

Older child in a standing position - height- during growth assessment take into account the parents height

In the case some dysmorphic features- compare the height of the crown-rump length to the whole body

Physiological disorder of body proportions - only at puberty (temporarily); pathological: dwarfism, progeria, congenital hypothyroidism, chondrodystrofia

Abnormally large growth: Primary hypopituitarism, Sotos syndrome

Inspection

Inspection of the patient provides valuable information

The pediatrician should be very good observer

Observation of the child at the time of interview, its behavior in relation to the mother, other people from the environment

Palpation

Skin and subcutaneous tissue (natural thickness, thickened, thin, edema)

The structure of the internal consistency of the organ (nodes, liver, spleen)

Dimension organ (correct, enlarged)

Organs: painful compression, warmth

Pathological murmurs

Specific situations: Ascites, swollen abdomen - study both hands

Percussion

Hitting with a finger, hand or tool in a specific part of a patient's body to vibrate and receive propagating sound reaching the ear of the examiner.

- Apparent - from the lungs
- Tympanic - from the stomach and intestines
- Dull - the liver
- Suppressed - over bone

Ascultation

Collection and evaluation:

- frequency
- the intensity (loudness)
- duration
- sound quality

It depends on the individual capacity of the examiner

Newborn

APGAR score after birth

Do a general survey

Observe baby's breathing, color, cry, size, body proportion and nutritional state and movements of the head and extremities.

Auscultation and palpation should be done when the baby is quiet

Preschool

Mobile patients

Communicate with patients at their own level; observe speech

During communication process observe the child

Get anthropometric measurements

Observe the child for behavioral features

School Age

Deal with the child as an increasingly independent individual

Communication is vital

Antropometric measurements, screen for auditory and visual problems

Check for vaccinations

Dental problems

Adolescents

There should be respect for privacy

Examination done privately and make sure that they are covered properly

Examine for changes and appropriateness of secondary sexual characteristics; emphasis on body concerns

Confidentiality- ethical right to health care

Transition to care to a non- pediatrician can be facilitated

Physical Examination

General survey

- weight
- height
- temperature
- PR, BP

Head

Shape, head circumference, sutures

Anterior fontanel

Ears- position and shape, tympanic membrane, impairment of hearing

Eyes- upright position, red reflex, pupils, cornea, funduscopy

Nose- patency, alar flaring, nasal septum deviation, nasal speculum examination

Mouth, tongue and throat-color of lips, teeth,

Tongue-shape, thickness, lesions;

Throat - tonsils, epiglottis

Chest

Chest-examined ahead of other regions

- Inspect,
- Auscultate,
- Palpate
- Percuss

Shape and circumference-barrel shaped in infancy then becomes elliptical, relationship of head and chest circumference

Respiratory system

rate and depth of respiration-30-60/min-NB and infancy;

6yrs and> 20-25/min;

deep and shallow breathing

irregularity

Palpation-vocal fremitus, pericardial or pleural friction rub

Chest

Mediastinum-cardiac dullness-2nd-5th rib extending on the right sternal border; from left sternal border-2nd rib to midclavicular line at the 5th rib

Impaired resonance over a fixed area indicates:

- consolidation
- collapse
- massive atelectasis

Shifting dullness- hydrothorax

Hyperresonance- emphysema

Auscultation

Auscultation-decreased breath sounds, rales, wheezing

Assess the type, symmetry of respiratory murmurs

Chest stridor (stridor) - a sharp, low-key, mostly inspiratory noise caused by obstruction of the upper airways breathing

Wheezing - is a continuous, coarse, whistling sound produced from the constricted peripheral airways.

Crackles (crepitations, or rales) are the clicking, rattling, or crackling noises that may be made by one or both lungs with a respiratory disease during inhalation. Crackles are caused by explosive opening of small airways and are discontinuous, nonmusical, and brief.

Chest

Auscultation

- quality of the heart sounds-clear and sharp,
- gallop rhythm,
- pericardial friction rub
- murmurs

Heart murmurs

Occurrence - systolic / diastolic / solid

Levine scale

1 - 2: quiet, difficult to listen

3: easy to hear, without perceptible tremor

4 - 6: loud, trembling under hand

The most intense - the mitral valve / aortic / pulmonary / trigeminal

Radiation: to the neck aortic stenosis, to the back in the CoA and pulmunary stenosis

Heart murmurs

Features innocent murmur:

- soft
- systolic
- asymptomatic
- usually heard at the left sternal border

Symptoms indicating that the murmur is significant:

- heard the whole heart loud tremor - (4 - 6 degree in Levine scale)
- diastolic
- accompanying other cardiac signs

Heart failure

Symptoms of heart failure in infants:

- Failure to thrive
- Sweating
- Tachypnoe
- Cardiomegaly
- Hepatomegaly

Abdomen

Inspection:

- flat when in supine,
- pot belly,
- distention-gas, fluids, mass,
- peristalsis

Abdomen

Palpation-inspiration and expiration

- soft or hard
- tenderness
- masses
- spleen- 1 cm below the left costal margin,
- liver-1-2 cm below the right costal margin,
- bimanual deep palpation for deeper masses

Abdomen

Percussion

- tympanitic-gas
- fixed dullness-masses
- shifting dullness-fluid

Ausculation

- decrease or absence of peristaltic sounds- paralytic ileus

Genitalia

Inspection

Female-vaginal discharge, imperforate hymen, size of clitoris, fusion of labia, ambiguous genitalia

Male-position of urethral orifice, size of penis, undescended testes, hernia or hydrocoele

Anus and Rectum

Anal fissures- bleeding and constipation

Prolapse of the rectal mucosa

Rectal examination

Musculoskeletal System

Range of motion of all joints is greatest in infancy

Position of feet at birth- fetal position

Hips examine for dislocation

Posture

The correct posture can be assessed when the child is able to stand and walk

newborn, infant - kyphosis

At the start of walking produces a second curvature of the spine is made- the lumbar lordosis (often over-emphasized in children 2-3yr).

Physiological flat feet, valgus knees - in the first two years of life