



# FEVERS

*A fever is a thermoregulatory increase of body temperature, that is the organized and coordinated answer of organism for illness.*

- Increase of body temperature is frequent and typical manifestation of many infectious diseases.
- At an increase of body temperature, as a rule, an infectious disease is supposed.
- However many sickly states, unconnected with infections, neoplastic processes, autoimmune and metabolic disturbances can cause a increase of body temperature.
- Increase of body temperature is one of the earliest signs when other clinical signs of illness are absent that presents problems of differential-diagnostic search.
- On the initial stage there are not many parameters of fever, having a diagnostic value – duration, character of temperature curve and other.
- Not every increase of body temperature is a typical for infectious diseases fever.

# An increase of body temperature can be also caused by

- ✓ disbalance between heat production and heat emission, what conduces to the increase of body temperature. Such increase of body temperature is named *hyperthermia* (this term is not a synonym of fever, but sometimes meets in literature). Hyperthermia is observed at the so-called thermal diseases (heat-prostration, hyperthyroidism, poisoning by the atropine and other).
- ✓ normal activity or physiological processes. A small increase of body temperature can be related to the circadian biorhythms (daily ranges). The temperature of body for a healthy man usually arrives at a maximal level to 18PM and minimum is in 3-4AM. Exactly these daily ranges increase as a result of fever. However they can be smoothed out, for example in a elderly age, at tuberculosis and also at the use of antipyretics.

# The different mechanisms of increase of body temperature will be realized.

## ❑ **Hyperthermia:**

- ❑ Simple hyperthermia, thermal exhaustion, heat-prostration, malignant hyperthermia;
- ❑ hyperthyroidism;
- ❑ poisoning.

## ❑ **Fever:**

- ❑ infectious diseases;
- ❑ uninfected illnesses (tumours, Hemolysis, diseases of connecting tissue and other).

## ❑ **Normal ranges:**


- ❑ physical overstrain;
- ❑ after meals;
- ❑ circadian biorhythms;
- ❑ ovulation;
- ❑ pregnancy;
- ❑ emotional overstrain.

# Hyperthermia.

- ❑ ***Simple hyperthermia*** during work in an apartment with the increased temperature of air or in the sunshine can be the only increased temperature of body without some clinical signs of illness.
- ❑ ***Thermal exhaustion*** has besides a moderate increase of body temperature a weakness, headache, dizziness, thirst, pallor, swoon state. A man is unable to continue work.
- ❑ ***Heat-prostration*** is the most severe form of thermal disease. It is a difficult syndrome with development of thermal damage of many systems of organism, particularly CNS. The high temperature of environment prevents heat emission.
- ❑ - Typical sign of heat-prostration is sharp beginning, stopping of perspiration and change of CNS from easy excitation and mental confusion up to coma.

# Hyperthermia.

- - Quite often – cramps. Skin is dry, hot, tachycardia, BP can be both decreased or mildly increased, breathing is hurried, deep.
- - Dehydration develops at most patients.
- - As a rule, the function of liver is broken, that shows up by the increase of activity of AST, ALT, and jaundice.
- - Hemorrhagic syndrome (DIC), ARF (hypernatremia, hypokaliemia, uremia, metabolic acidosis) develop at part of patients.
- Some drugs: phenothiazines, antidepressants, amphetamine and other assist to increase body temperature by worsening of heat emission, especially at parenteral use.

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- *Malignant hyperthermia* is rare variant of heat-prostration and is characterized by catastrophic disorder of muscular metabolism, arising up under influence of general anaesthesia or application of muscular relaxants (ditilin, caffeine, cardiac glycosides, general anaesthesia). It is original «farmacogenetic myopathy» conditioned genetically, that shows up only by the increase of activity of serum creatine kinase.
  - For children malignant hyperthermia is observed at symptoms of anomalous development : kyphosis, lordosis, short height, cryptorchidism, underdeveloped mandibula, plicate neck, ptosis.

**Malignant hyperthermia is severe complication that appears during or soon after anaesthesia and characterized :**

- By a increase of body temperature on 1°C every 5 min, sometimes up to 43-46 °C.
- Tachycardia, cyanosis, muscular rigidity, loss of consciousness.
- Lethality at malignant hyperthermia arrives at 80%, almost DIC-syndrome presents.
- Laboratory data show sharp increase of activity of creatine phosphokinase, LDG and AST.





Most difficult for differential diagnostics cases are increase of body temperature, caused by both a fever and overburning of organism. It can lead to development of signs of heat-prostration at infectious patient, especially at dehydration and high temperature of air (in tropical districts, anamnesis is important).

- **If a patient has an increased temperature of body, then the first task is a decision of question : whether a patient has really a fever or increase of body temperature appeared due to other reasons.**
- It is considered fever is typical for infectious diseases, however some infectious diseases (cholera, botulism) can develop without fever or at subclinical form.

# It is established facts:

- 1) general and decision factor of development of fever is production of endogenous pyrogens (IL-1, TNF,  $\alpha$ -IFN and other) by neutrophils, monocytes, macrophages and other tissue elements during an inflammatory process;
- 2) pyrogens have influence on a hypothalamus, that results in the increase of maintenance of arachidonic acid;
- 3) arachidonic acid, being the metabolic predecessor of prostaglandins and some other substances, increases hypothalamic termoregulation.
- From all pathological reasons, caused a fever, infections are most frequent and meaningful for detection of initial diagnosis and specific treatment can be appointed whereupon.


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- □ It is necessary to know some variants of reaction of organism of patient on the damages of tissues or infection, causing a fever. Patients in child's and juvenile period can have the expressed fever at development of infectious process.
  - □ For adults the extreme increase of temperature is observed rarely, except for the cases of heat-prostration, development of heart attack of brain or postoperative complication of malignant hyperthermia after introduction of some muscular relaxants or anesthetics.
  - □ For patients in elderly age a weak temperature reaction registers during an infectious disease, however, if a fever develops, then the state of disturbance of consciousness (disorientations) can come.

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- A differential-diagnostic value acquires not only fact of presence (or absence) of fever, but it's features : beginning, intensity, type of temperature curve, terms of appearance of organ damages etc.
  - An increase of body temperature can be rapid (sharp), when a patient clearly marks the time of start of disease (flu, leptospirosis of and other). At a rapid increase of body temperature, as a rule, a patient marks the chill of different intensity from chilling to the shivering (malaria of and other). At some illnesses a fever grows gradually (typhoid fever).



## Classification due to level of increase of body temperature:

- - subfebrile fever (37 – 37,9°C),
- - moderate fever (38 – 39,9°C),
- - high fever (40 – 40,9°C),
- - hyperpyrexia (41° With and higher).

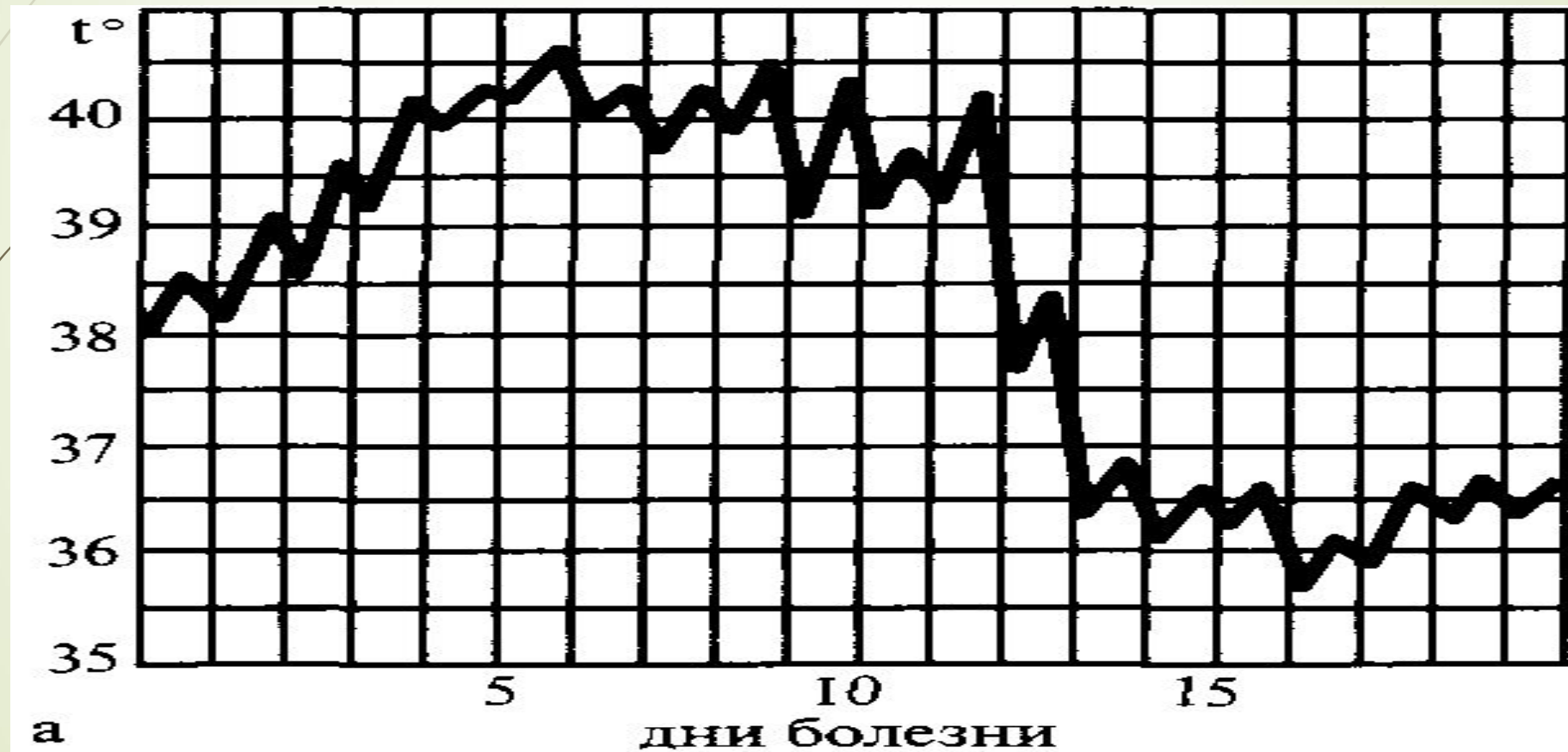


## **Classification due to length of growth of temperature to the maximal level:**

- 1) during a 1-2 days - acute,
- 2) during a 3-5 days - subacute,
- 3) more than 5 days - gradual.

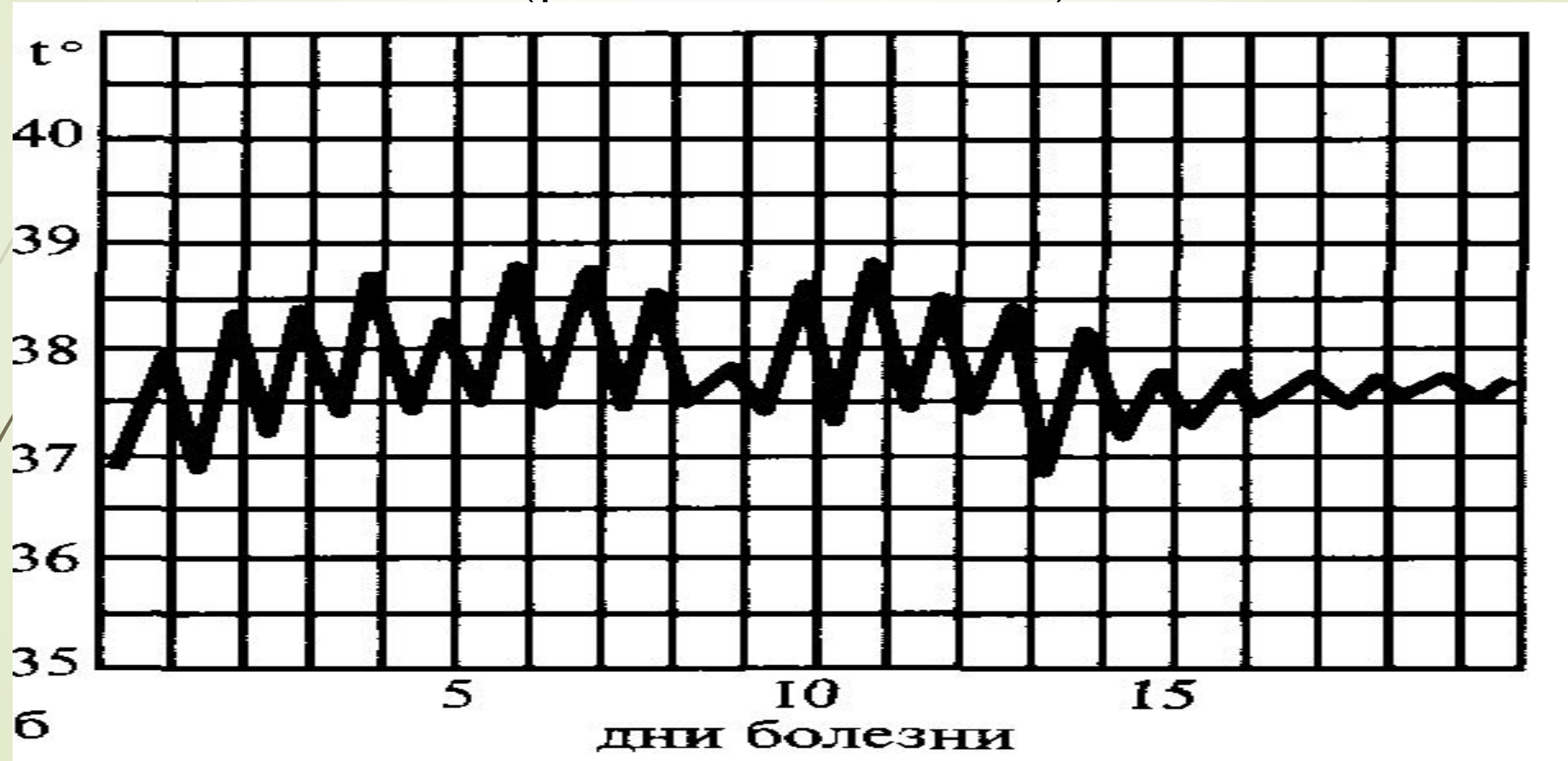
## *A permanent fever* (febris continua)

is characterized by constant high fever, more often up to  $39^{\circ}\text{C}$  and higher, daily fluctuation less than  $1^{\circ}\text{C}$  (observed at typhoid fever, Q-fever, spotted fever and other)



*An aperient (remittent) fever* (f. remittens)

differs by daily fluctuation of the temperature of body over  $1^{\circ}\text{C}$ , but not more than  $2^{\circ}\text{C}$  (psittacosis of and other).



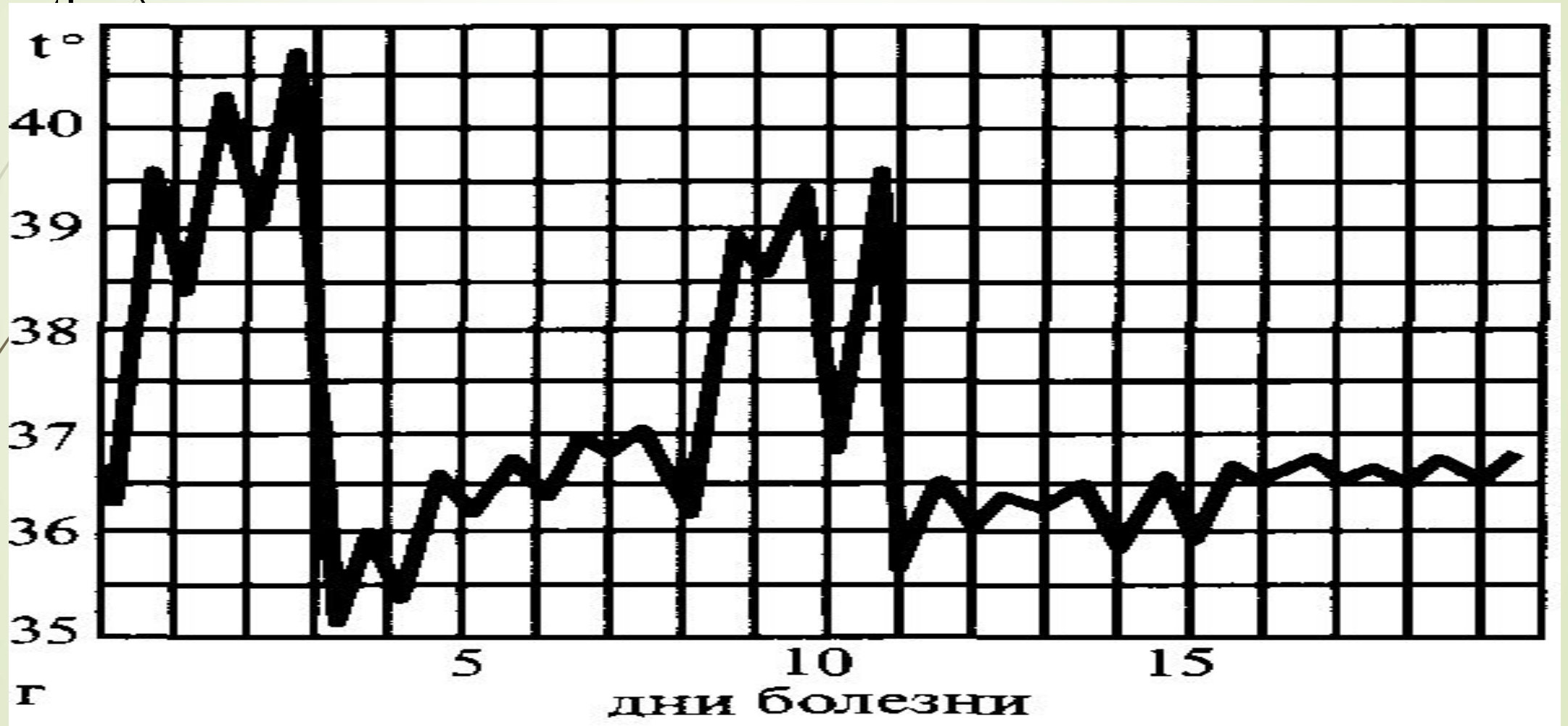


*An intermittent* (f. intermittens) shows up the correct changing of high or very high and normal temperature of body with daily fluctuation in 3-4°C (malaria of and other).

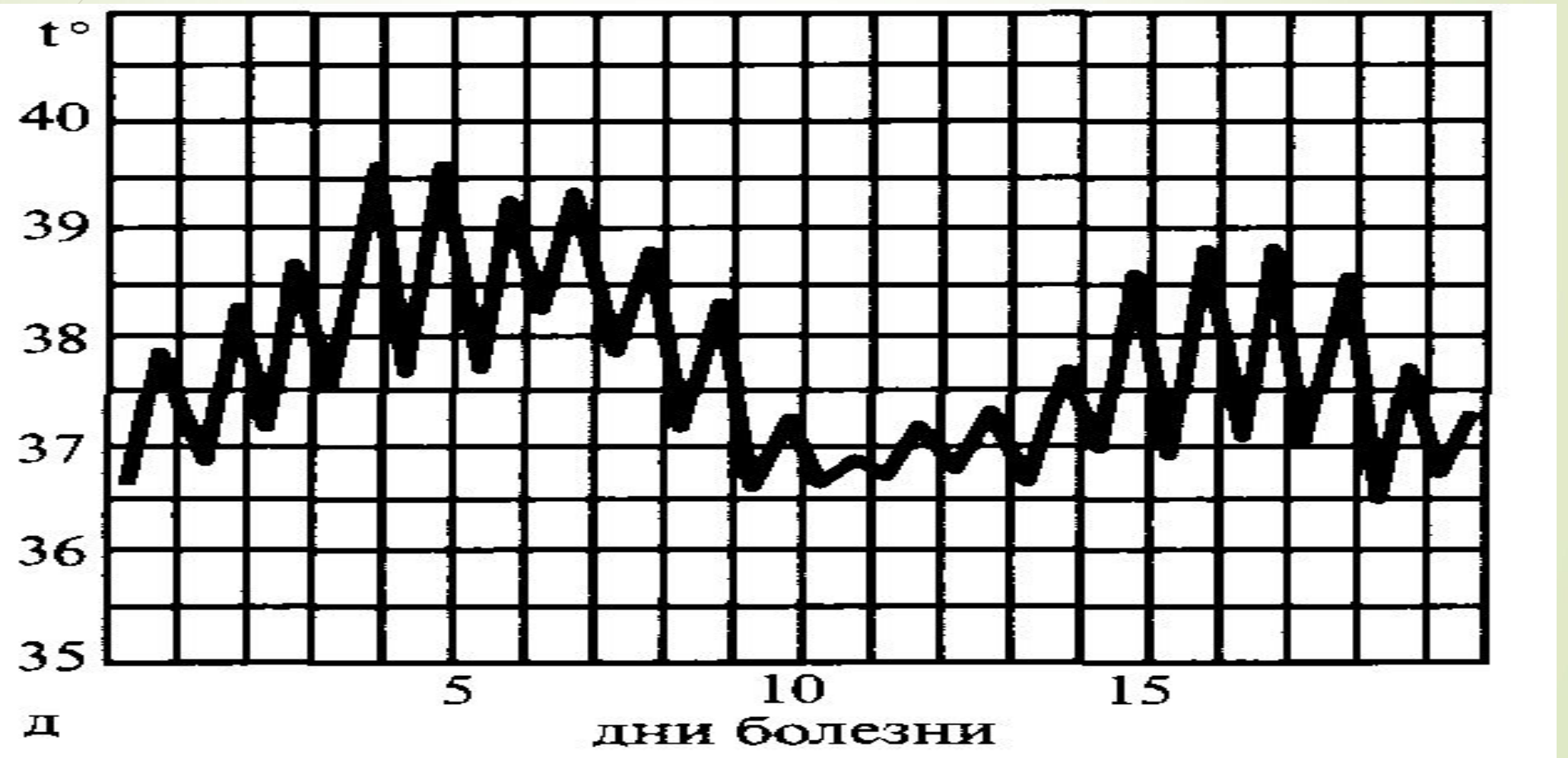


*A recurrent fever* (f. recurrens)

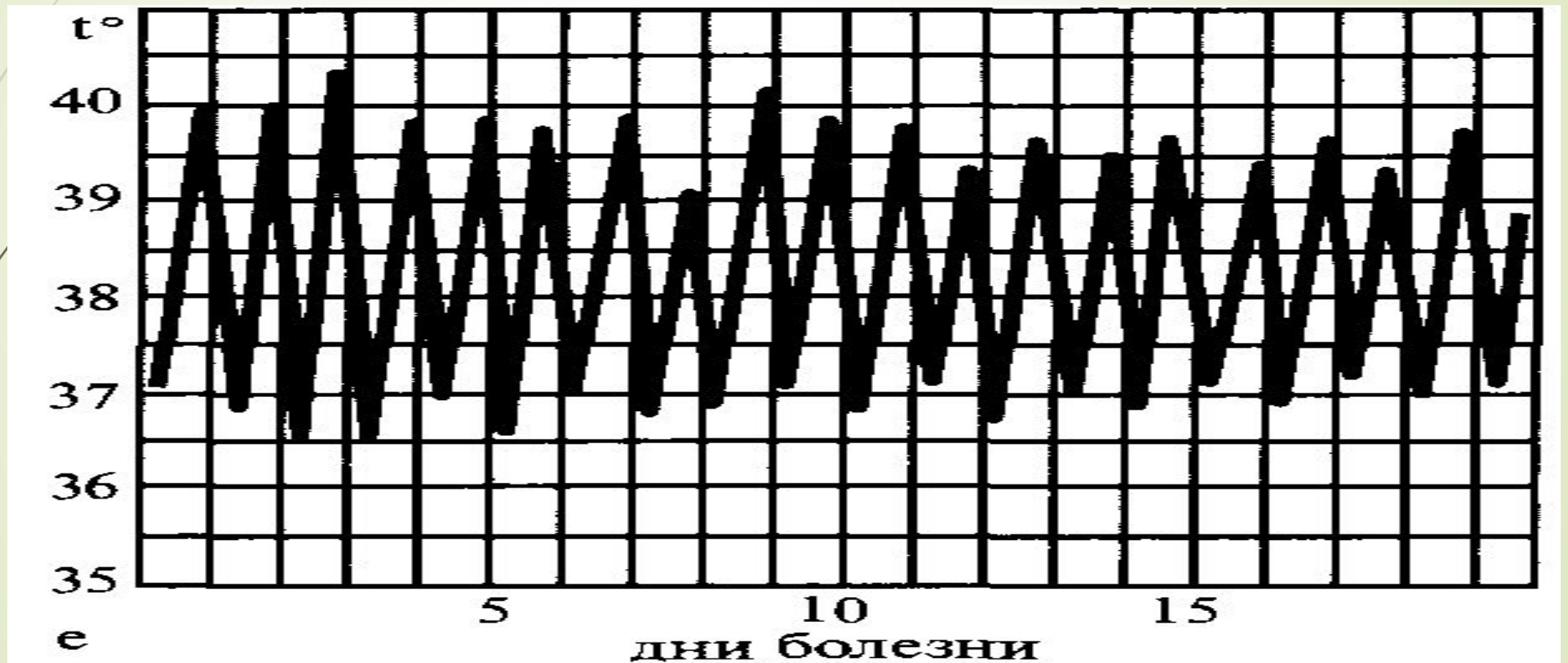
is characterized by the correct changing of high-feverish and non-feverish periods with duration of few days (relapsing fever and



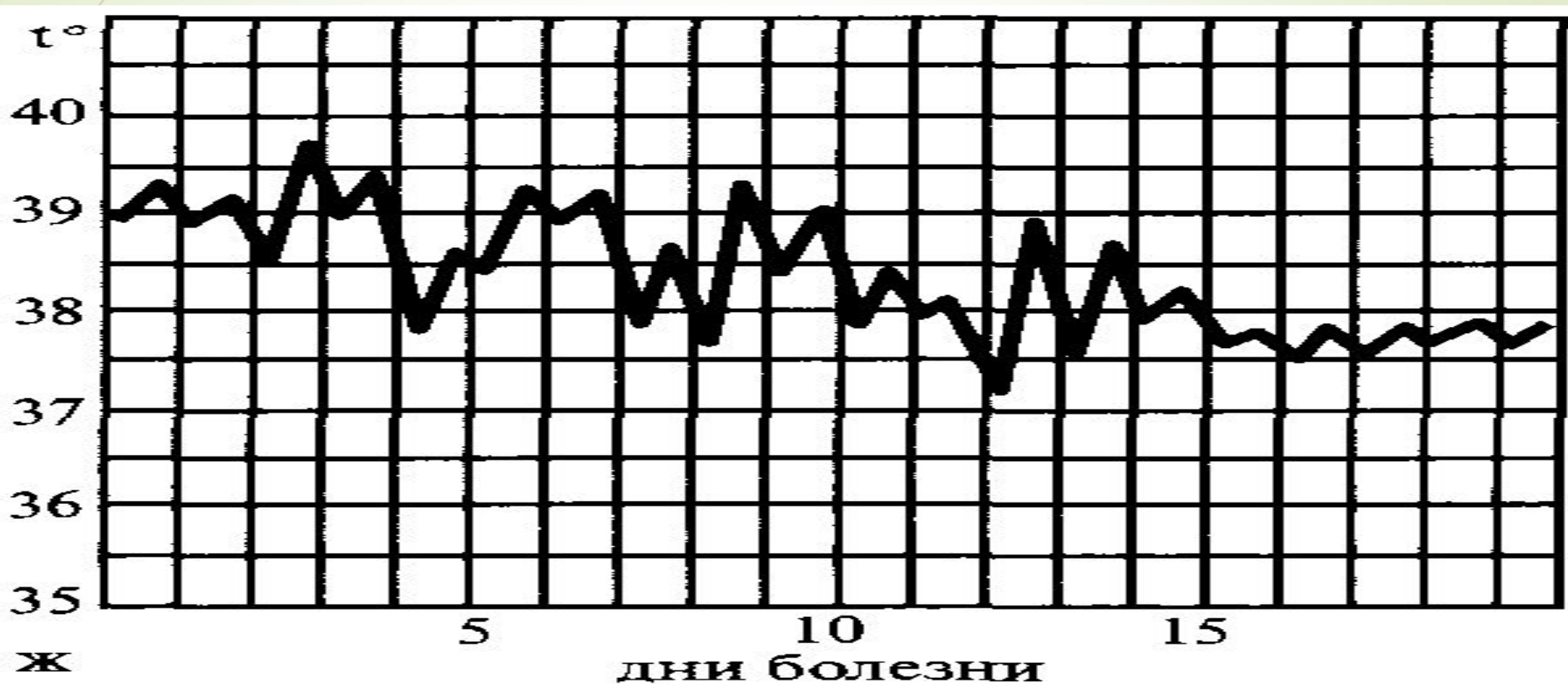
***Undulating or wave-like fever*** (f. undulans) differs in gradual growth of temperature to the high level and then it's gradual decline to subfebrile, and sometimes to normal; in 2-3 weeks a cycle repeats (visceral leishmaniasis, brucellosis, lymphogranulomatosis).



*Hectic (exhausting) fever* ( f. gectica) is prolonged fever with very large daily fluctuation ( $3-5^{\circ}\text{C}$ ) with a decline to the normal or subnormal temperature (sepsis, generalized viral infections of and other).



*An irregular (atypical) fever* (f.irregularis) is characterized by large daily fluctuation, different degree of increase of body temperature, indefinite duration. It stands near the hectic fever, but deprived correct character (sepsis of and other).




**The perverted (inverted) fever (*f. inversa*)** differs by morning temperature higher than evening one.

Besides these generally accepted types, two else can be selected:

□ 1) acute undulating fever;

□ 2) relapsing.

□ **An acute undulating fever (*f. undulans acuta*)** unlike *f. undulans* it is characterized by relatively short waves (3 – 5 days) and absence of remissions between waves; usually a temperature curve is a row of discontinuous waves, i.e. every subsequent wave is less intensity (on a height and duration), than previous (typhoid, psittacosis, mononucleosis and other); when a subsequent wave is conditioned by joining of complication, there are reverse correlations, i.e. the second wave is more intensive, than first (epidemic parotitis, flu and other).

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- *A relapsing fever* (f. recidiva) unlike a recurrent fever (correct alternation of waves of fever and apyrexia) is characterized by the relapse (usually one) of fever, that develops in different terms (from 2 days to month and more) after completion of the first temperature wave (typhoid, psittacosis, leptospirosis and other). Relapses develop at part of patients (10 – 20%). Relapse has an important diagnostic value, but its absence does not eliminate possibility of the illnesses.
  - Every infectious disease can have different variants of temperature curve, among that most frequent, typical for one or another nosology form presents. Sometimes it even allow to put diagnosis (three-day malaria of and other).

## For differential diagnostics next is important:

- - height and duration of fever;
- - interval between start of fever and appearance of organ damages;
- - epidemiological state;
- - change of temperature curve under influence of etiotropic curative remedy.



## *Duration:*

- - A short increase of body temperature already allows to suspect such often meeting illnesses as herpangina, ARVI, acute shigellosis, flu, quinsy without complications and other.
- - The prolonged increase of body temperature (over month) is observed relatively rarely and only at some infectious diseases with prolonged or chronic development (brucellosis, toxoplasmosis, visceral leishmaniasis, tuberculosis and other).




*Interval between start of fever and appearance of organ damages:*

At some infectious diseases this period is less than 24h (herpetic infection, scarlet fever, rubella, meningococccemia and other), at other it lasts from 1 to 3 days (measles, chicken-pox), and finally at the some illnesses he is over 3 days (typhoid fever, viral hepatitis and other).

## *Epidemiological state:*

- Character and level of infectious morbidity in a region in this season of year sets to think about possibility of some concrete disease (flu and other).
- Pointing on a contact with patients a measles, scarlet fever, chicken-pox, rubella and other respiratory infections is important. These data are compared with the terms of latent period.
- Other epidemiology data can be important (stay in endemic region etc.).



For differential diagnostics the **change of temperature curve under influence of etiotropic curative remedy** on the ambulatory stage or as a result of self-treatment is significant (viral, bacterial or other etiology). It is necessary to confess that it does not always allow to suppose the presence of certain diseases.

## Short-term fever

- Viral.
- Bacillosis of ear, throat, nasal sinuses, lungs, urogenital system.

## Prolonged fever


- Infections (viral, bacterial, mycotic, protozoa).
- a) Systemic (tuberculosis, subacute bacterial endocarditis and other).
- b) Local (liver abscess, infection of urogenital system and other).
- Tumours (lymphoma, leucosis, hypernephroma, disseminated carcinoma).
- Diseases of connective tissues (collagenoses).
- Hypersensitivity.
- Diseases of the endocrine system (thyrotoxicosis, Addison's disease).
- Other diseases (granulomatosis, inflammation of bowel, pulmonary embolism and some less often meeting disturbances).

## Fever Conditioned by a stay in a hospital

- Patients without complications.
- a) Postoperative infection.
- б) drug disease.
- в) Complications of the respiratory system (atelectasis, embols, pneumonia).
- г) Infections of urination system.
- д) Phlebitis.
- e) Inadequate drainage of tissue liquid.

Patients with a secondary immunodeficiency.


- a) same reasons of fevers what for patients without complications.
- б) Infections caused by opportunistic microorganisms.
- в) Fever related to the tumours.



At the infectious diseases with a fever an important concept is Feverish-intoxication syndrome (FIS) – syndrome characterized by nonspecific adaptation reaction of macroorganism on microbial aggression. Degree of intensity of FIS – universal criterion of estimation of severity of development of infectious process.

*In a concept «Feverish-intoxication syndrome» is included:*

- fever,
- myasthenia,
- symptoms of damage of CNS and cardiovascular system.

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- In a concept «FIS» next signs are not included: intoxication due to organ damage and organ insufficiency (kidney, hepatic, cardiac), symptoms conditioned by the specific action of microbial toxins (myasthenia at botulism, cramps at tetanus, cholera, edema of fatty tissue at diphtheria).
  - FIS classifies on the degree of intensity of his separate components (see a table.). Thus the degree of severity depends from the most intensive symptoms.



## Classification of FIS by the degree (N. D. Juschuk, 2009)


Basic symptoms	Degree of intensity			
	mild	moderate	severe	very severe
Fever	Up to 38°C	38,1–39,0°C	39,1–40°C	Over 40°C
General weakness (myasthenia)	Fatigueability	Limitation of mobility	of lying position	lying position, difficulty at active motions
pains in muscles, joints, bones	Weak or absent	Moderate	Strong	Strong, already can be absent
Chill	–	Sensitiveness to cold, chillinge	Intensive	Shivering
Headache	slight	Moderate	Strong	Intensive, can be absent

## Classification of FIS by the degree (N. D. Juschuk, 2009)

Basic symptoms	Degree of intensity			
	mild	moderate	severe	very severe
sleep disturbance	possible	Often	Insomnia, sleepiness	Insomnia, sleepiness
Decline of appetite	Possible	Constantly	Anorexia	Anorexia
Nausea	—	Possible	Often	Possible
Vomiting	—	—	Possible	Often
Meningeal syndrome	—	—	Possible	Often

## Classification of FIS by the degree (N. D. Juschuk, 2009)

Basic symptoms	Degree of intensity			
	mild	moderate	severe	very severe
Disturbance of consciousness	—	—	Stupor, sopor	Sopor, coma
Cramps	—	—	Possible	Possible
Delirium	—	—	Possible	Often
HR per min	Less 80	81-90	91-110	Over 110 or bradycardia is possible
BP	Normal	Low border of normal	80/50–90/60	less 80/50

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- - The presented classification allows to estimate severity of the state of patient, but does not eliminate variants when the state of patient is not corresponded to it.
  - - If patient's criteria corresponding to the mild degree of intoxication, but disturbance of consciousness or hypotonia present, intoxication and state of patient is necessary to detect as severe.
  - - If the separate criteria of intoxication are not adequate to other, it is necessary to eliminate organ pathology, for example:
    - ❖ a) headache with nausea and vomiting, disorders of consciousness, cramps allow to think of neuroinfection
    - ❖ б) tachycardia, hypotonia – about the damage of heart,
    - ❖ в) nausea, vomiting, anorexia – about a damage GIT,
    - ❖ г) high fever at the mild degree of intoxication requires the exception of noninfectious etiology of illness.

**The intensity of FIS is different** at some infectious diseases. For example:

- a) at brucellosis a high fever often develops without strong intoxication and patients can save ability to work at the temperature of body 39,0 °C and higher.
- б) at the severe development of infectious mononucleosis acute myasthenia prevails at weak intensity of other signs of intoxication.

□

**At infectious diseases FIS is conditioned mainly by affecting hypothalamic centers of thermoregulation :**

- 1) exogenous (microbial),
- 2) endogenous pyrogen, formed by granulocytes and macrophages that accumulate at inflammation (at ischemia and necrosis under action of different causative agents),
- 3) products of endogenous metabolism.



**So, during realization of differential diagnostics of infectious diseases with fever it is necessary to analyse next parameters:**

- Height of fever.
- Duration of fever.
- Type of temperature curve.
- Duration of period from the start of fever to appearance of typical organ damage.
- Character of damages of organs.
- Epidemiology
- Influence of etiotropic remedy on the fever.

## The fever attended with intoxication is typical:

- – for most bacterial, viral and protozoo infectious diseases,
- generalised mycosises;
- – possible: at worm invasions (opisthorchiasis, trichinosis, shistosomiasis and other);
- – **not typical**: for a cholera, botulism, hepatitises, uncomplicated amebiasis, skin leishmaniasis, gisrdiasis, localised mycosises and many intestinal worm invasions.

The degree of fever shows severity of illness in general but it is necessary to analyse degree of intoxication and other clinical signs.

## In most cases FIS accompanies with the specific symptoms of certain illness :

- – exanthemas,
- – polyadenitis,
- – arthritis,
- – catarrhal-respiratory syndrome,
- – hepatolienal syndrome,
- – meningeal syndrome,
- – dyspepsia syndrome,
- – other





**In default of these syndromes patients are subject to hospitalization and inspection in the conditions of diagnostic department, where:**

- specify anamnesis of illness,
- collect carefully epidanamnesis (contacts, journeys to the regions with natural-nidal diseases),
- make thermometry for clarification of temperature curve,
- laboratory researches - CBC, urine analysis, ECG, X-ray of the chest and other,
- test on malaria («thick drop») and typhoid fever,

□ More deep research includes researches directed to the exception of

- ❖ – pathologies of ENT-organs;
- ❖ – tuberculosis (consultation of phthisiologist, Mantoux tuberculin test);
- ❖ – sepsis (repeated bacteriological research of blood, urine);
- ❖ – endocarditis (USG of heart),
- ❖ – pathologies of abdominal region, pelvis, kidneys;
- ❖ – collagenoses (rheumatological tests, LE- cells);
- ❖ – oncology (albumen, albuminous factions, oncomarkers, sternal puncture, X-ray of flat bones, consultation of haematologist);
- ❖ – central disturbance of termoregulation (EEG, NT, consultation of neurologist);
- ❖ – hyperthyroidism (hormones of thyroid, USG, consultation of endocrinologist).

Before determination of clinical diagnosis **pathogenetic treatment** directed to the detoxication and decline of excessive temperature reaction is used.

□ *At the mild degree of severity :*

□ domestic regime,

□ diet: drink to 3 l/day. (tea, juices, fruit drink, fruit compote, water), exception of spices, fried and canned food.

□ *At middle severity:*

□ bed rest, hospitalization on individual indication (fever 5 days and more, severe chronic diseases),

□ same diet with the exception of fats

□ antipyretics (NSAD).

□ *At a severe and very severe degree:*

- hospitalization, strong bed regime
- diet: mechanically and chemically sparing diet with limitation of fats and albumen,
- antipyretics according to general and individual contra-indications, physical cooling methods,
- i.v. detoxication, according to indication albumen, plasma.
- **Antimicrobial remedy** are not indicated at home before determination of diagnosis; at hospital - after the bacteriologic examination; at suspicion on severe infection wide spectrum antibiotics are indicated i.v.
- **GLUCOCORTICOIDS** (prednisolon and other) are used only on individual indication on a background antimicrobial therapy.

## □ Fevers at out-patients

- Short-term fevers (duration less one week) usually viral and finishes by spontaneous recovery.
- Most widespread reasons of short-term fever of unviral nature of – it is bacillosiss of ENT-organs, bronchi or urogenital system at the normal immune system.
- *If patient has increased temperature more than 1-2 weeks without a diagnosis, this “fever of unknown origin” (FUO) needs more careful examination.*

# For comfortable analysis of clinical data at FOU all infectious diseases are divided into:

## □ *systemic:*

- ✓ tuberculosis(usually miliary);
- ✓ subacute bacterial endocarditis,
- ✓ brucellosis,
- ✓ toxoplasmosis,
- ✓ chronic meningococemia (rarely),
- ✓ salmonellosis,
- ✓ CMV-INFECTION,
- ✓ EBV-INFECTION

□ *localised (often related to the organs of abdominal region, clinical signs are less intensive, that hampers their diagnostics) :*

- ✓ hidden abscess (usually in a right upper quadrant, in a liver, under a diaphragm),
- ✓ cholangitis,
- ✓ abscesses in a kidney,
- ✓ pyelonephritis,
- ✓ infections of small pelvis organs of women.
- ✓ about 1/3 – infectious diseases,
- ✓ 20-40% – diseases of connecting tissue (systemic lupus erythematosus, pseudorheumatism, polyarthritiss, rheumatic myalgia, rheumatic fever, and also mixed diseases on the basis of disturbances of synthesis and disintegration of collogen),
- ✓ tumours – leucosis and lymphadenoma, hypernephroma, hepatoma, adenocarcinoma of GIT.



□ *noninfectious reasons of FUO include reasons not considered before :*


- ✓ pulmonary embolism,
- ✓ Besnier-Boeck-Schaumann (sarcoidosis)
- ✓ relapsing cellulitis (illness of Вебера-Крисчена),
- ✓ medicinal fever,
- ✓ domestic Mediterranean fever,
- ✓ periodic fever,
- ✓ hyperthyroidism,
- ✓ Addison's disease,
- ✓ nonspecific granulomatosis of liver.





□ **The initial laboratory examination of patient with FUO must include:**

- ✓ CBC with the count of formula of blood, ESR;
- ✓ serum test on a syphilis;
- ✓ X-ray of thorax;
- ✓ tests of the functional state of liver;
- ✓ uranalysis and stool on the presence of the hidden blood;
- ✓ microbiological research of urine, stool, and also from three to six researchs of blood (with the exposure of mushrooms of sort of *Candida* and *Trichophyton*);
- ✓ USG of organs of abdominal region and pelvis;
- ✓ Tuberculin test;
- ✓ complex of indexes of autoimmune diseases (antinuclear antibodies, rheumatoid factor and other);

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- ❑ Puncture of CSF it is necessary to make in presence of symptoms such as headaches, pains in back, change of mental condition.
  - ❑ If a diagnosis remains not clear, intravenous pyelography, examinations of gall-bladder, liver, biopsy, research of bowels, hormonal examination can become the next stage.
  - ❑ CT, NT, angiography are applied for the exposure of abscesses or tumours.

***If reason of FUO still remains not clear:***

- ✓ or trial treatment is appointed, usually including antibiotics, antiphthisic remedy, glucocorticoids and heparin (for liquidation of pulmonary emboluss),
- ✓ or taken break in a reception of prescribed medicine to eliminate a medicinal fever.


# Fevers for inhospital patients

□ *Next reasons of its origin are assumed:*

- ✓ postoperative complications (abscess);
- ✓ medicinal fever (disturbance of intercommunication of pulse and temperature, eosinophilia, atypical lymphocytosis and rash, although often – only fever in default of the enumerated signs);
- ✓ complications related to the respiratory system (pneumonia, atelectasis and embolism);
- ✓ infections of urinoexcretory tract;
- ✓ phlebitises, especially around the places of intravenous injection;
- ✓ inadequate drainage of the tissue liquids infected or sterile (for example, pleural liquid).
- ✓ Increase of temperature on 0,5-1°C sometimes is possible at the hospitalized patients – "psychogenic fever".

For the hospitalized patient with the signs of the secondary immunodeficiency conditioned by either a basic disease (for example, presence of tumour) or use of antibiotics or immunodepressants, it is necessary to expose infectious diseases caused mainly by:


- ✓ ordinary hospital microflora,
- ✓ *Candida*,
- ✓ *Aspergillus*,
- ✓ *Phycomycetes*, (*Pneumocystis carini* – analysis of sputum not always sufficient for diagnostics, – research of biopsy material is needed at a bronchoscopy)
- ✓ *Pneumocystis*,
- ✓ *Toxoplasma*,
- ✓ *Listeria*, *Legionella*,
- ✓ *Nocardia*,
- ✓ *CMV and EBV*



□ In the acute phase of disease trial course of treatment by antibiotics is possible before result of the microbiological research. It is directed against the most credible for localization causative agents (for example, streptococci, anaerobic microorganisms and Gram-negative enterobacteria for GIT or enterococci and gram-negative bacteria in case of urogenital sepsis).


□ It is important to remember that for some patients with sepsis, especially in elderly age a leucocytosis and fever can be absent but present nonspecific signs:

- ✓ hypotension,
- ✓ hypothermia,
- ✓ hypoglycemia,
- ✓ oliguria,
- ✓ confusion of consciousness.

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- From organ damages those that is more typical for infectious diseases have the special differentially-diagnostic value:
  - 1) exanthema;
  - 2) enanthema;
  - 3) hyperemia of face and neck;
  - 4) icterus;
  - 5) hemorrhagic syndrome;
  - 6) inflammation of mucous membranes of upper respiratory tracts;
  - 7) pneumonia;
  - 8) tonsillitis;
  - 9) diarrhea;
  - 10) increase of liver and spleen;
  - 11) lymphadenopathy;
  - 12) changes of CNS (meningitises and encephalitises).

## *Infectious diseases with enanthema:*


- herpangina;
- herpetic infection;
- candidiasis of mucous membranes;
- measles;
- zoster;
- chickenpox;
- smallpox;
- parotitis epidemic;
- Stevens-Johnson syndrome;
- epidemic typhus.



*The hyperemia of face and neck* («hood sign») usually combines with the injection of vessels of conjunctiva, sclera and moderate hyperemia of mucous membrane of pharynx :


- Brill disease;
- flu;
- Denge fever, Yellow fever, Marburg fever and other hemorrhagic fevers
- Rickettsioses;
- Tsutsugamushi;
- leptospirosis;
- pseudotuberculosis.





## *Icterus* (usually at 5-7 day of illness and later)

- viral hepatitis,
- malaria,
- yellow fever,
- opisthorchiasis,
- pseudotuberculosis,
- mononucleosis
- psittacosis (very rarely),
- salmonellosis (very rarely).



□ ***Hemorrhagic syndrome*** (mainly for patients with severe form of diseases).

□ as a result vasotropic actions of pathogen,

□ DIC-syndrome

□ ***Signs:***

□ from small point hemorrhages

□ to the massive hemorrhage by a diameter to a few centimetres (meningococemia), appearances of the bloody vomiting (yellow fever, hepatic coma at viral hepatitis).

*Inflammation of mucous membranes of upper respiratory system.*

Illnesses there can be signs of inflammation of respiratory tracts (rhinitis, pharyngitis, laryngitis, tracheitis):

- flu; ARVI; herpetic infection; Dengue fever, mosquito fever; Yellow fever;
- measles; rubella;
- meningococcal nasofaringitis; mycoplasmosis,
- streptococcal pharyngitis; staphylococcal pharyngitis;
- anthrax, pulmonary form; enterovirus illnesses; paratyphoid of A.


# *Tonsillitis:*

- quinsies (streptococcal, staphylococcal, necrotic);
- adenoviral diseases;
- anginal-bubonic form of rabbit-fever;
- typhoid fever;
- diphtheria of pharynx;
- infectious mononucleosis;
- candidiasis;
- scarlet fever.



## ***Tonsillitis* at noninfectious illnesses::**

- syphilis,
- radiation illness,
- leucosises,
- agranulocytosis of and other




*Increase of liver and spleen* («hepatolienal syndrome»), at infectious diseases more often the increase of both organs is marked usually only after 4-7 days from the start of illness.

- Rickettsioses;
- brucellosis;
- viral hepatitis;
- yellow fever;
- pseudotuberculosis;
- leishmaniasis;
- malaria;
- typhoid fever;
- salmonellosis;
- sepsis;
- typhus recurrent;
- rabbit-fever;
- mononucleosis;
- infectious erythema.

# *Lymphadenopathy*

- The increase of lymphatic nodes in combination with a fever can be observed at noninfectious illnesses (lymphogranulomatosis, metastases of tumours, illness of blood of and other), but however such combination more often testifies to the infectious process and has a substantial value for differential diagnostics of fevers.
- It is expedient to subdivide the increase of lymphatic nodes into the following 3 subgroups: buboes (considerable increase regional to the gate of infection lymphatic nodes), generalised lymphadenopathy and mesadenitises.



- **Forming of buboes :**

- felinosis;
- rat-bite fever;
- rabbit-fever;
- plague.

- **Presence of mesadenitis:**

- yersiniosis;
- pseudotuberculosis;
- typhoid fever;
- toxoplasmosis;
- tuberculosis.

- **Generalised lymphadenopathy:**

- adenoviral infection;
- brucellosis;
- measles;
- rubella;
- mononucleosis infectious;
- parainfluenza;
- sepsis;
- HIV/AIDS;
- toxoplasmosis.




*Symptoms of damage of CNS* : meningitises (purulent and serosal) and encephalitises (meningoencephalitises).

**□ Purulent meningitises:**

- listeriosis;
- meningococcal infection;
- meningitis caused by a hemophilus;
- pneumococcal, staphylococcal meningitis;
- salmonellous meningitis;
- AIDS

**□ Serosal meningitises:**

- tick encephalitis;
- leptospirosis;
- choriomeningitis;
- psittacosis;
- parotitis epidemic;
- poliomyelitis;
- tubercular meningitis;
- enterovirus;
- CMV infection.

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- **Encephalitis**  
(meningoencephalitis) :
  - Venezuelan encephalomyelitis of horse;
  - eastern encephalomyelitis of horse;
  - hemorrhagic fever Omsk;
  - herpetic infection;
  - influenzal encephalopathy;
  - western encephalomyelitis of horse,
  - tickborn, Californian, Japanese encephalitis;
  - whooping-cough;
  - chickenpox;
  - smallpox;
  - parotitis epidemic;
  - poliomyelitis;
  - AIDS;
  - epidemic typhus;
  - toxoplasmosis;
  - CMV-INFECTION;
  - enteroviral encephalitis.
  - measles;
  - rubella;

Subdividing of meningitis into purulent and serosal is possible only after Lumbar puncture that is usually produced after detection of syndrome of meningitis.



# Epidemiological data.

- 1) staying in tropical countries or in the endemic regions;
- 2) season;
- 3) hemotransfusion according to duration of latent period;
- 4) contact with sick respiratory infections;
- 5) zoonotic illnesses (contact with a cattle, sheep, dogs, cats, rodents, birds).



**THE END**