LYMPHADENOPATHY

- **LYMPHADENOPATHY (**LAP) is an increase of superficial lymphatic nodes (SLN), regardless of reason and character of pathological process (inflammation or proliferation).
- The basic sign of LAP is an increase of SLN with disorder of their structure and function, arising up for diverse reasons.
- Quite often LAP is the manifestation of serious disease which requires in complex of labtests and in difficult diagnostic cases in systemic dynamic supervision.
- Considering the large variety of illnesses accompanied a LAP, modern diagnostics requires co-operation of different specialists - clinicians, laboratorist, morphologists.
- The increase of deep lymphatic nodes has special terminology («bronchadenitis», « mesenteric lymphadenitis » and other).

- ***LAP presents at:***
- infectious (including tuberculosis and syphilis) diseases;
- lymphoproliferation;
- autoimmune;
- oncology;
- local inflammatory processes.

- ***In clinical classification 3 groups of LAP are distinguished:***
- **I. Primary damages SLN are caused:**
  - ✔ by a malignant tumour damage: sharp lymphoblastic leucosis, chronic lymphatic leukemia, Hodgkin's lymphoma and non-Hodgkin's lymphoma, plasmacytomas and other
  - ✔ by benign process (histiocytosis and other).
- **II. Inflammatory(lymphadenitis) :**

  a) local or regional increase of SLN;

  б) generalized increase of SLN

- **III. The secondary (reactive) include:**

✔ infections:

- bacterial – tuberculosis, syphilis, brucellosis and other;
- viral – infectious mononucleosis, hepatitis, rubella, HIV-infection, measles, CMV and other;
- mycotic – actinomycosis, histoplasmosis;
- parasitic – toxoplasmosis, gisrdiasis, chlamidiosis and other;

✔ immune damages: pseudorheumatism, system red lupus, serum illness, medicinal allergy, bites of insects and other;

✔ metastases of tumour in SLN at the cancer of lungs, bronchial tubes, thyroid and other;

✔ other damages: Besnier-Boeck-Schaumann, amyloidosis, illnesses of accumulation.

- ***Normal SLN are:***
- painless,
- movable,
- elastic consistency, size from a few mm to 1-1,5 см.
- size increases at antigen irritation.

- ***Groups of SLN :***

1) cervical,
2) neck,
3) deep neck,
4) parotid,
5) submandibular (submental),
6) supra- and subclavicular,
8) jugular,
9) superficial,
10) intercostal,
11) front mediastinal,
12) parasternal,
13) arm-pits,
14) ulnar,
15) inguinal (superficial inguinal),
16) popliteal,
17) deep inguinal,
18) lumbar,
19) internal,
20) iliac.

- ***Examination and palpation of SLN are conducted in the next order:***

1) cervical,
2) parotid,
3) neck,
4) submandibular,
5) supra- and subclavicular,
6) arm-pits,
7) ulnar,
8) inguinal,
9) popliteal.

- ***Increase of lymphatic nodes :***
- one group − local(regional) LAP,
- two and more groups —generalized LAP.
- LAP can be**:**
- aqute (to 3 months),
- prolonged (to 6 months),
- chronic (persistent) LAP (over 6 months).

- ***Structure of SLN:***
- 1) crust substance,
- 2) paracortical zone,
- 3) medullary substances.

- **A crust substance** contains many lymphoid follicles. Its basic function is embryonization of B-lymphocytes.
- **Medullary substance** places near the gate of lymphonodus and contains many lymphatic sines, arterial, venous vessels and small lymphoid elements. Antigen stimulation results in development of hyperplasia that is subdivided into :
  - – **follicle** (mainly at bacillosiss),
  - – **paracortical (**at viral infections),
  - – **sinus** (sinus histiocytosis at infectious and tumours is characterized by expansion of lymphatic sinuses of medullary substance due to macrophages).

- ***The mechanisms of increase of SLN are following:***
- increase of maintenance of normal lymphocytes and macrophages, increase of blood stream (up to 10-25 times) after antigen stimulation, because of it is 15-multiple increase during 5-10 days;
- infiltration by inflammatory cells at infectious processes;
- proliferation of tumour, malignant lymphocytes and macrophages in SLN;
- infiltration by malignant cells;
- infiltration of SLN by macrophages overcrowded by lipids (cerebrosine lipoidosis - Gaucher's disease, sphingomyelinosis - Niemann-Pick disease).

- ***The state of SLN includes next indexes:***

1) localization of enlarged SLN and/or determination of area of increase of group SLN, symmetric or not;
2) sizes and form (rounded or oval);
3) consistency (elastic, soft, dense);
4) amount (no more 2 SLN in one group - single, more 2 - regional, SLN on a few areas on periphery is widespread);

5) tenderness (painful, painless, painful at palpation);
6) change of skin above SLN (inflammation causes hyperemia and edema, tumour does not change);
7) state of skin and surrounding tissue (cohesion, formation of conglomerates);
8) dynamics of growth of SLN (sharp increase with subsequent reduction is reactivity, and prolonged slow growth is a tumour);
9) development of compression syndrome (compression of upper respiratory tract, vessels).

- ***At clinical research and estimation of the state of SLN take into account :***
- complaints at its tenderness and slight swelling,
- localization,
- clearness of contours and sizes,
- skin above them,
- consistency,
- mobility or cohesion inter se and by surrounding tissues.

- ***Localization*** of enlarged SLN allows to suspect the certain diseases with the purpose of realization of the further researchs.

- ✔ Cervical − infections of hairy part of head, rubella, infectious mononucleosis.
- ✔ Parotid – infectious conjunctivitises, infections of URT, epipharynxs, infectious mononucleosis, parotitis.
- ✔ **It is important** to estimate the state of amygdales, pharynx, mucous membrane of mouth, teeth, presence of adenoids.

- Some inflammatory processes in larynges, diffuse neck lipomatosis, the tumours of parotid gland also can result in such consequences.
- **It is necessary** to eliminate both tumours (lymphogranulomatosis) and metastases of different localization (head and neck, lungs, mamma and thyroid glands).
- **Suppuration** of neck lymphonoduss takes place at tubercular lymphadenitis.
- **One-sided** increase of neck or submandibular SLN maybe at a lymphadenoma or tumour of nonlymphoid nature in area of head and neck.

- **Increase supraclavicular** SLN is practically never reactive, and it is more often related to the lymphoproliferative tumours (lymphogranulomatosis), lymphoma, metastasises of tumour (stomach, ovaries, lungs, mamma).
- **A node of Virchov** is enlarged left supraclavicular SLN at tumour of gastrointestinal tract.
- **Parotid SLN -** illnesses of eyes, adenoviral infection.
- **Armpit LAP** – ordinary trauma of hand, felinosis, lymphoma, brucellosis.
- **Diagnosis of «axillar lymphadenopathy»** quite often is put at malignant formations of mamma.
- **Bilateral increase of inguinal SLN** presents at venereal diseases, but an inguinal lymphogranuloma and syphilis are accompanied with one-sided LAP.

- **The progressive increase of inguinal SLN** without the signs of infection disease supposes about malignant tumour. Engaging in the process of femoral SLN testifies to pasterellosis and lymphoma.
- **LAP of mediastinum** is often difficult to diagnose and next can help:

✔ cough,
✔ labouring breath,
✔ hoarseness of voice,
✔ phrenoplegia,
✔ dysphagia,
✔ symptoms of compression or supraclavicular or cava vein.

- **Bilateral LAP of mediastinum** is typical for lymphoma.
- **One-sided LAP** specifies about cancer of lung, while the **bilateral** more often is benign and related to Besnier-Boeck-Schaumann disease, tuberculosis, system mycotic infection, but at presence of pleural exudate and damage of lungs cancer is possible.
- **Abdominal LAP** can testify to infections, metastases of tumours of bowels and leucosises.
- **Increase extraperitoneal and peritoneal SLN** is usually unconnected with inflammation and often presents at tumour.

- **Mesenteric LAP** with suppuration and sometimes calcification can be present at tuberculosis.
- **At inflammatory LAP** more often with increase of regional SLN is entrance gate of infection, SLN is enlarged mildly, always sensible and painful at palpation, skin above SLN is hyperemic, SLN are usually movable and not soldered inter se, densely-elastic consistency, sometimes lymphangitis presents.

- ***End stages after suppuration or necrosis of SLN are:***
- complete resorption,
- sclerosis.

- **Frequent reasons of inflammatory LAP with increase of regional SLN, :**
  - ✔ tonsillitis,
  - ✔ stomatitis,
  - ✔ otitis,
  - ✔ eczemas of face, extremities,
  - ✔ conjunctivitis,
  - ✔ thrombophlebitis,
  - ✔ erypsipelas,
  - ✔ furuncles, carbuncles,
  - ✔ panaritium,
  - ✔ scratches, bites,
  - ✔ inflammatory process of genitalia.

- For final verification of nature of LAP the dynamic of local inflammatory process and regional LAP on a background the conducted therapy (antibiotics, surgical treatment) is needed.
- In the cases of the saved increase of SLN at regression of local inflammatory process and especially at presence of SLN dense consistency the biopsy of SLN for histological research is indicated.

- ***Spreading*** of LAP is important for preliminary diagnosis.
- ✔ The increase of one SLN more often requires the exception of tumour process or is reactive at local inflammatory process in a corresponding area (reactive inguinal lymphadenitis at genital infections, increase submandibular SLN at tonsillitis).
- ✔ A generalized lymphadenopathy presents at the diseases of different nature, in particular, infectious (viral infections, toxoplasmosis), system (system red lupus), lymphoproliferativ tumours (chronic lymphatic leukemia).

- ***Sizes and consistency of SLN***
- If SLN is up to 1 см, it is probably reactive LAP.
- If SLN no more than 1,5 см without the obvious signs of infection the monitoring is needed.
- If SLN more than 2 см, it is more often tumour or granulomatous process.
- Consistency of SLN (soft, dense, elastic), their mobility and tenderness arre also important in the process of differential diagnostics.

- ✔ Dense SLN usually characteristic for the metastases of tumours.
- ✔ The tenderness of SLN at palpation of often testifies about inflammatory process (infectious or reactive).
- ✔ Persistent LAP meets at the chronic infection and is characterized:
  - – by symmetry (arm-pits, submandibular nodes),
  - – by absence of clear clinical manifestations of disease,
  - – by prolonged duration,
  - – is characteristic sign of HIV-infection.

- ***At the clinical estimation of SLN it is taken into account also:***
- **age**
  - ✔ before 30 y.o. LAP is more often benign and related to the reaction on infection
  - ✔ in age older 50 often related with oncology (in 40% − benign)
- **common state**: in the moment of discovery of enlarged SLN:
  - ✔ safe,
  - ✔ gets worse.
- **anamnesis**
  - ✔ presence of cat scratches - at felinosis;
  - ✔ contact with rodents, bites of insects at a rabbit-fever;
  - ✔ use of meat, milk without sufficient heat treatment, work with animals at brucellosise;
  - ✔ contact with cats, use of thermally not treated meat at a toxoplasmosis;
  - ✔ bites of tick - at Lyme disease et cetera).

- **presence of other data :**

✔ increase of liver, spleen,

✔ fever,

✔ rash,

✔ arthral syndrome,

✔ damage of organs and systems

✔ laboratory indexes (CBC etc.).