Ministry of Health of Ukraine
POLTAVA STATE MEDICAL UNIVERSITY
Chair of surgical stomatology and maxillo-facial surgery

International classification of tumors of maxillofacial area by WHO. Organization of the oncostomatological aid for patients and their medical examination.

Tumors and tumor-like defeats of a germinal origin – branchial , thyroglossal and dermoid cysts. Clinic, diagnostics, treatment.

Candidate of sciences, reader Lokes K.P.

Lecture plan

1. International classification of tumors of maxillofacial area by WHO.
2. Organization of the oncostomatological aid for patients and their medical examination.
3. Tumors and tumor-like defeats of a germinal origin – branchial , thyroglossal and dermoid cysts. Differential diagnosis
4. Clinic, diagnostics in dentistry, treatment methods.

* **Oncology** is the branch of medicine dealing with tumors (cancer). A medical professional who practices oncology is an oncologist. The term originates from the Greek "Ογκολογία" derived from onkos (όγκος), meaning bulk, mass, or tumor, and the suffix -logy (-λογία), meaning "study of" or "to talk about".
* The oncology – science which studies the origin, development, prevalence of tumours, opportunities of their diagnostics, treatment and preventive measures.

interconnected directions of oncology

* 1. Biological - experimental oncology. It studies reasons, patterns and mechanisms of growth of tumours.
* 2. Individual - clinical oncology. Studies reasons of occurrence, pathogenesis, clinical displays of tumour development, develops methods of diagnostics, treatment and preventive measures of concrete displays of tumours of various localizations.
* 3. Social - study of prevalence and character of tumours (epidemiology), reasons of their occurrence and development, sexual as well as age structure of patients, etc.

Risk factors

* Smoking is a risk factor. Leaving a cigarette on the lip is predictive of lip cancer risk irrespective of cumulative tobacco consumption.
* Chewing tobacco is a risk factor for cancer of the oral cavity.
* Alcohol consumption strongly increases the risk of developing cancers of the oral cavity, pharynx and larynx.
* Poor diet
* the presence of gastro-oesophageal reflux disease
* genetic susceptibility to head and neck cancer
* Human papillomavirus (HPV) 16 sero-positivity is associated with an increased risk of oral/ pharyngeal cancer.

TNM classification of carcinomas of the oral cavity

T — Primary tumour

TNM	FIGO
TX	Primary tumour cannot be assessed
T0	No evidence of primary tumour
Tis	Carcinoma in situ
T1	Tumour 2 cm or less in greatest dimension
T2	Tumour more than 2 cm but not more than 4 cm in greatest dimension
T3	Tumour more than 4 cm in greatest dimension

TNM classification of carcinomas of the oral cavity

T — Primary tumour

T4a (lip)	**Tumour invades through cortical bone, inferior alveolar nerve, floor of mouth, or skin (chin or nose)**
T4a (oral cavity)	Tumour invades through cortical bone, into deep/extrinsic muscle of tongue (genioglossus, hyoglossus, palatoglossus, and styloglossus), maxillary sinus, or skin of face
T4b (lip and oral cavity)	Tumour invades masticator space, pterygoid plates, or skull base; or encases internal carotid artery

TNM classification of carcinomas of the oral cavity

N - Regional Lymph Nodes

NX	**Regional lymph nodes cannot be assessed**
N0	No regional lymph node metastasis
N1	Metastasis in a single ipsilateral lymph node, 3 cm or less in greatest dimension
N2	Metastasis as specified in N2a, 2b, 2c below
N2a	Metastasis in a single ipsilateral lymph node, more than 3 cm but not more than 6 cm in greatest dimension
N2b	Metastasis in multiple ipsilateral lymph nodes, none more than 6 cm in greatest dimension
N2c	Metastasis in bilateral or contralateral lymph nodes, none more than 6 cm in greatest dimension
N3	Metastasis in a lymph node more than 6 cm in greatest dimension

TNM classification of carcinomas of the oral cavity

M – Distant metastasis

MX	**Distant metastasis cannot be assessed**
M0	No distant metastasis
M1	Distant metastasis

Stage grouping

Stage 0	Tis	N0	M0
Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T1, T2	N1	M0
	T3	N0, N1	M0
Stage IVA	T1, T2, T3	N2	M0
	T4a	N0, N1, N2	M0
Stage IVB	Any T	N3	M0
	T4b	Any N	M0
Stage IVC	Any T	Any N	M1

Soft Tissue Tumours

Adipocytic tumours

- **Benign**
  Lipoma
  Lipomatosis
  Lipomatosis of nerve
  Lipoblastoma / lipoblastomatosis
  Angiolipoma
  Myolipoma of soft tissue
  Chondroid lipoma
  Extra-renal angiomyolipoma
  Extra-adrenal myelolipoma
  Spindle cell / pleomorphic lipoma
  Hibernoma

Soft Tissue Tumours

* **Adipocytic tumours**
* **Intermediate (locally aggressive)**
  Atypical lipomatous tumour / well differentiated liposarcoma
* **Malignant**
  Dedifferentiated liposarcoma
  Myxoid liposarcoma
  Pleomorphic liposarcoma
  Liposarcoma, not otherwise specified

Soft Tissue Tumours

* **Fibroblastic / myofibroblastic tumours**

* **Benign**
  Nodular fasciitis
  Proliferative fasciitis
  Proliferative myositis
  Myositis ossifficans
  Fibro-osseous pseudotumour of digits
  Ischemic fasciitis
  Elastofibroma
  Fibrous hamartoma of infancy
  Fibromatosis colli

* Juvenile hyaline fibromatosis
  Inclusion body fibromatosis
  Fibroma of tendon sheath
  Desmoplastic fibroblastoma
  Mammary-type myofibroblastoma
  Calcifying aponeurotic fibroma
  Angiomyofibroblastoma
  Cellular angiofibroma
  Nuchal-type fibroma
  Gardner fibroma
  Calcifying fibrous tumour

Soft Tissue Tumours

Fibroblastic / myofibroblastic tumours

* **Intermediate (locally aggressive)**
  Palmar / plantar fibromatosis
  Desmoids-type fibromatosis
  Lipofibromatosis
  Giant cell fibroblastoma
* **Intermediate (rarely metastasizing)**
  Dermatofibrosarcoma protuberans
    Fibrosarcomatous dermatofibrosarcoma protuberans
    Pigmented dermatofibrosarcoma protuberans
  Solitary fibrous tumour
    Solitary fibrous tumour, malignant
  Inflammatory myofibroblastic tumour
  Low grade myofibroblastic sarcoma
  Myxoinflammatory fibroblastic sarcoma /
    Atypical myxoinflammatory fibroblastic tumour
  Infantile fibrosarcoma

Soft Tissue Tumours

Fibroblastic / myofibroblastic tumours

* **Malignant**
  Adult fibrosarcoma
  Myxofibrosarcoma
  Low-grade fibromyxoid sarcoma
  Sclerosing epithelioid fibrosarcoma

Soft Tissue Tumours

So-called fibrohistiocytic tumours

* **Benign**

  Tenosynovial giant cell tumour
    Localized type
    Diffuse type
    Malignant

  Deep benign fibrous histiocytoma

* **Intermediate (rarely metastasizing)**

  Plexiform fibrohistiocytic tumour

  Giant cell tumour of soft tissue

Soft Tissue Tumours

So-called fibrohistiocytic tumours

* **Benign**

  Tenosynovial giant cell tumour
    Localized type
    Diffuse type
    Malignant

  Deep benign fibrous histiocytoma

* **Intermediate (rarely metastasizing)**

  Plexiform fibrohistiocytic tumour

  Giant cell tumour of soft tissue

Soft Tissue Tumours

Smooth-muscle tumours

* **Benign**
  Leiomyoma of deep soft tissue
* **Malignant**
  Leiomyosarcoma (excluding skin)
* Angioleiomyoma was reclassified under pericytic (perivascular) tumours.

Soft Tissue Tumours

Skeletal-muscle tumours

* Rhabdomyoma
  Embryonal rhabdomyosarcoma
  Alveolar rhabdomyosarcoma
  Pleomorphic rhabdomyosarcoma
  Spindle cell / Sclerosing rhabdomyosarcoma

Soft Tissue Tumours

Vascular tumours

- **Benign**
  Haemangioma
    Synovial
    Venous
    Arteriovenous haemangioma / malformation
  Epithelioid haemangioma
  Angiomatosis
  Lymphangioma
- **Intermediate (locally aggressive)**
  Kaposiform haemangioendothelioma

Soft Tissue Tumours

Vascular tumours

- **Intermediate (rarely metastasizing)**
  Retiform haemangioendothelioma
  Papillary intralymphatic angioendothelioma
  Composite haemangioendothelioma
  Pseudomyogenic (epithelioid sarcoma-like) haemangioendothelioma
  Kapsoi sarcoma
- **Malignant**
  Epithelioid haemangioendothelioma
  Angiosarcoma of soft tissue
- Pseudomyogenic (epithelioid sarcoma-like) haemangioendothelioma was added to the intermediate (rarely metastasizing) subgroup.

Soft Tissue Tumours

Nerve sheath tumours

* **Benign**
  Schwannoma (including variants)
  Melanotic schwannoma
  Neurofibroma (including variants)
    Plexiform neurofibroma
  Perineurioma
    Malignant perineurioma
  Granular cell tumour
  Dermal nerve sheath myxoma
  Solitary circumscribed neuroma
  Ectopic meningioma
  Nasal glial heterotopia
  Benign Triton tumour
  Hybrid nerve sheath tumours

Soft Tissue Tumours

Nerve sheath tumours

* **Malignant**
  Malignant peripheral nerve sheath tumour
  Epithelioid malignant nerve sheath tumour
  Malignant Triton tumour
  Malignant granular cell tumour
  Ectomesenchymoma

Soft Tissue Tumours

Tumours of uncertain differentiation

- **Benign**
  Acral fibromyxoma
  Intramuscular myxoma (including cellular variant)
  Juxta-articular myxoma
  Deep ("aggressive") angiomyxoma
  Pleomorphic hyalinizing angiectatic tumour
  Ectopic hamartomatous thymoma
- **Intermediate (locally aggressive)**
  Haemosiderotic fibrolipomatous tumour

Soft Tissue Tumours
Tumours of uncertain differentiation

* **Intermediate (rarely metastasizing)**
  Atypical fibroxanthoma
  Angiomatoid fibrous histiocytoma
  Ossifying fibromyxoid tumour
    Ossifying fibromyxoid tumour, malignant
  Mixed tumour NOS
  Mixed tumour NOS, malignant
  Myoepithelioma
  Myoepithelial carcinoma
  Phosphaturic mesenchymal tumour, benign
  Phosphaturic mesenchymal tumour, malignant

Soft Tissue Tumours
Tumours of uncertain differentiation

* **Malignant**
  Synovial sarcoma NOS
    Synovial sarcoma, spindle cell
    Synovial sarcoma, biphasic
  Epithelioid sarcoma
  Alveolar soft-part sarcoma
  Clear cell sarcoma of soft tissue
  Extraskeletal myxoid chondrosarcoma
  Extraskeletal Ewing sarcoma
  Desmoplastic small round cell tumour
  Extra-renal rhabdoid tumour
  Neoplasms with perivascular epithelioid cell differentiation (PEComa)
    PEComa NOS, benign
    PEComa NOS, malignant
    Intimal sarcoma

Tumours of Bone

Chondrogenic tumours

* **Benign**
  Osteochondroma
  Chondroma
    Enchondroma
    Periosteal chondroma
  Osteochondromyxoma
  Subungual exostosis
  Bizarre parosteal osteochondromatous proliferation
  Synovial chondromatosis
* **Intermediate (locally aggressive)**
  Chondromyxoid fibroma
  Atypical cartilaginous tumour / chondrosarcoma grade I

Tumours of Bone

Chondrogenic tumours

* **Intermediate (rarely metastasizing)**
  Chondroblastoma
* **Malignant**
  Chondrosarcoma
    Grade II, grade III
  Dedifferentiated chondrosarcoma
  Mesenchymal chondrosarcoma
  Clear cell chondrosarcoma

Tumours of Bone

Osteogenic tumours

- **Benign**
  Osteoma
  Osteoid osteoma
- **Intermediate (locally aggressive)**
  Osteoblastoma

Tumours of Bone

Osteogenic tumours

* **Malignant**
  - Low-grade central osteosarcoma
  - Conventional osteosarcoma
    - Chondroblastic osteosarcoma
    - Fibroblastic osteosarcoma
    - Osteoblastic osteosarcoma
  - Telangiectatic osteosarcoma
  - Small cell osteosarcoma
  - Secondary osteosarcoma
  - Parosteal osteosarcoma
  - Periosteal osteosarcoma
  - High-grade surface osteosarcoma

Tumours of Bone

Osteoclastic giant cell rich tumours

* **Benign**
  Giant cell lesion of the small bones
* **Intermediate locally aggressive, rarely metastasizing**
  Giant cell tumour of bone
* **Malignant**
  Malignancy in giant cell tumor of bone
* Giant cell tumor of bone is now considered a locally aggressive, very rarely metastasizing lesion.

Tumours of Bone

Fibrohistiocytic tumours

* **Benign**
  Benign fibrous histiocytoma / non-ossifying fibroma
* Malignant fibrous histiocytoma of bone was removed from the current classification. MFH of bone was renamed undifferentiated high-grade pleomorphic sarcoma of bone.

Tumours of Bone

Notochordal tumours

- **Benign**
  Benign notochordal tumour
- **Malignant**
  Chordoma

Tumours of Bone

Vascular tumors

- **Benign**
  Haemangioma
- **Intermediate locally aggressive rarely metastasizing**
  epithelioid hemangioma
- **Malignant**
  epithelioid hemangioendothelioma
  angiosarcoma

Tumours of Bone

Tumour syndromes

* Beckwith-Wiedemann syndrome
  Cherubism
  Enchondromatosis: Ollier disease and Maffucci syndrome
  Li-Fraumeni syndrome
  McCune-Albright syndrome
  Multiple osteochondromas
  Neurofibromatosis type 1
  Retinoblastoma syndrome
  Rothmund-Thomson syndrome
  Werner syndrome

The main categories of cancer

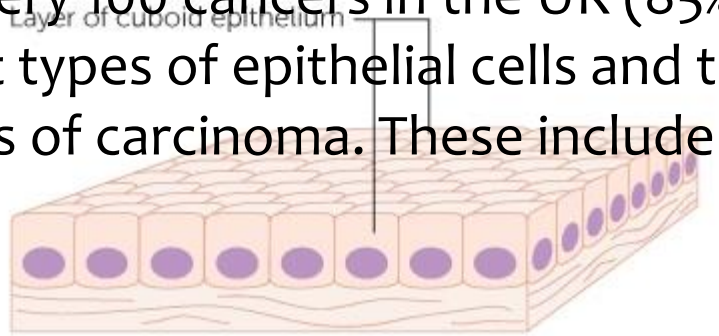
* **Carcinoma** – cancer that begins in the skin or in tissues that line or cover internal organs. There are a number of subtypes, including adenocarcinoma, basal cell carcinoma, squamous cell carcinoma, and transitional cell carcinoma
* **Sarcoma** – cancer that begins in the connective or supportive tissues such as bone, cartilage, fat, muscle, or blood vessels
* **Leukaemia** – cancer that starts in blood forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and go into the blood
* **Lymphoma and myeloma** – cancers that begin in the cells of the immune system
* **Brain and spinal cord cancers** – these are known as central nervous system cancers

Carcinomas

Carcinomas start in epithelial tissues. These cover the outside of the body as the skin. They also cover and line all the organs inside the body, such as the organs of the digestive system. And they line the body cavities, such as the inside of the chest cavity and the abdominal cavity.

Carcinomas are the most common type of cancer. They make up about 85 out of every 100 cancers in the UK (85%).

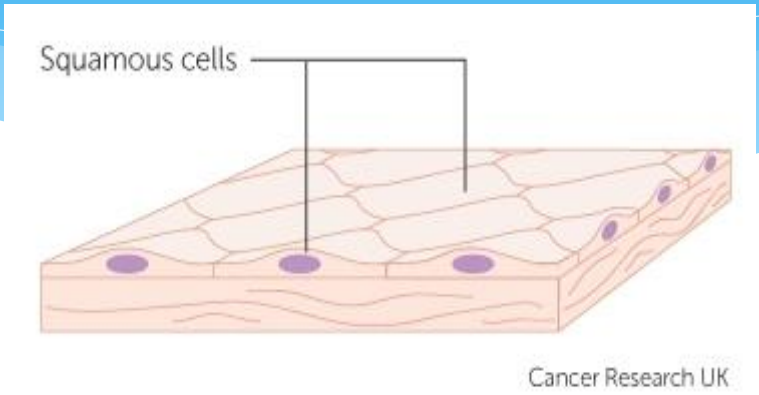
There are different types of epithelial cells and these can develop into different types of carcinoma. These include those below.



Cancer Research UK

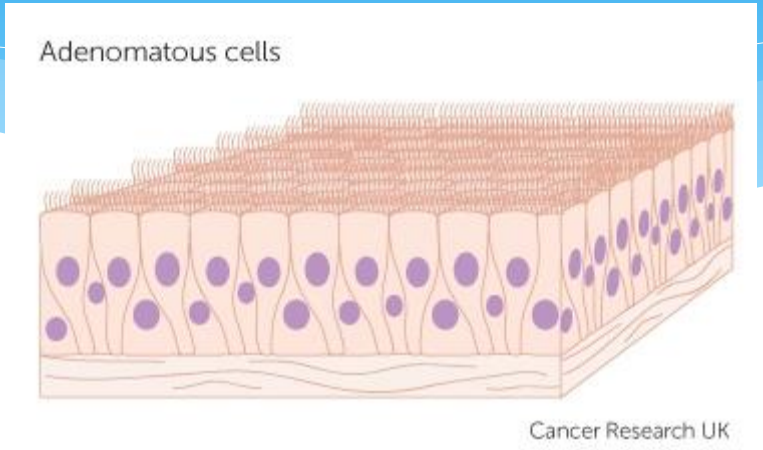
Squamous cell carcinoma

* Squamous cell carcinoma starts in squamous cells. These are the flat, surface covering cells found in areas such as the skin or the lining of the throat or food pipe (oesophagus).



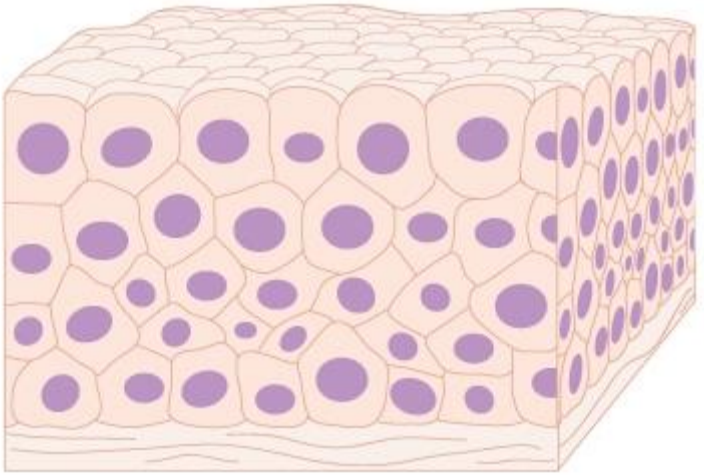
Adenocarcinoma

* Adenocarcinomas start in glandular cells called adenomatous cells that produce fluids to keep tissues moist.



Transitional cell carcinoma

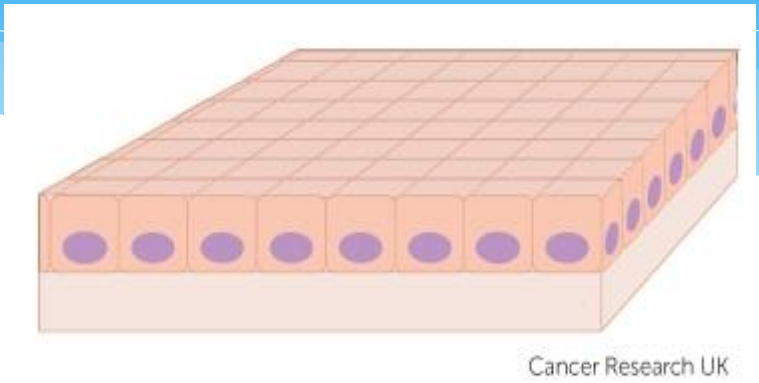
* Transitional cells are cells that can stretch as an organ expands, and they make up tissues called transitional epithelium. An example is the lining of the bladder. Cancers that start in these cells are called transitional cell carcinoma.



Cancer Research UK

Basal cell carcinoma

* Basal cells are found in the deepest layer of skin cells. Cancers that start in these cells are called basal cell carcinomas. They are uncommon.

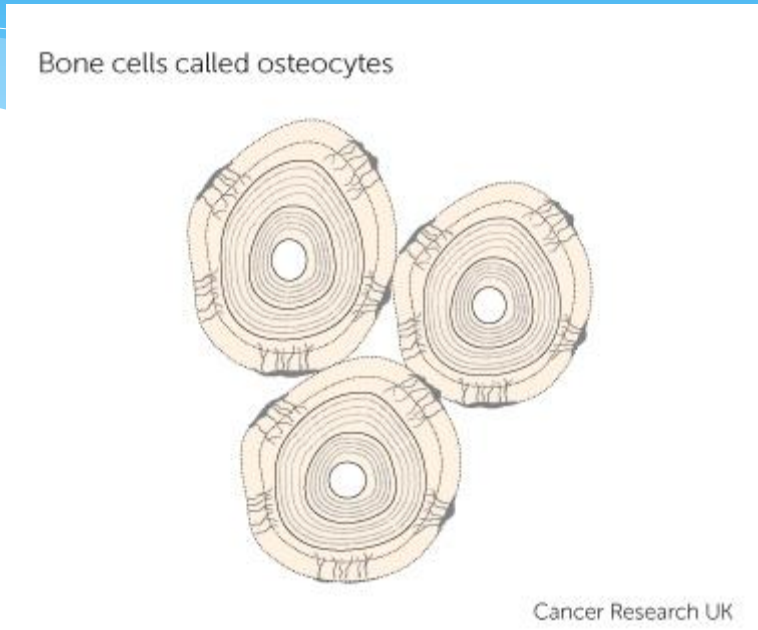


Sarcomas

* Sarcomas start in connective tissues, which are the supporting tissues of the body. Connective tissues include the bones, cartilage, tendons and fibrous tissue that support the body organs.
* Sarcomas are much less common than carcinomas. They are usually grouped into two main types – bone sarcomas (osteosarcoma) and soft tissue sarcomas. Altogether, these make up less than 1 in every 100 cancers diagnosed (1%).

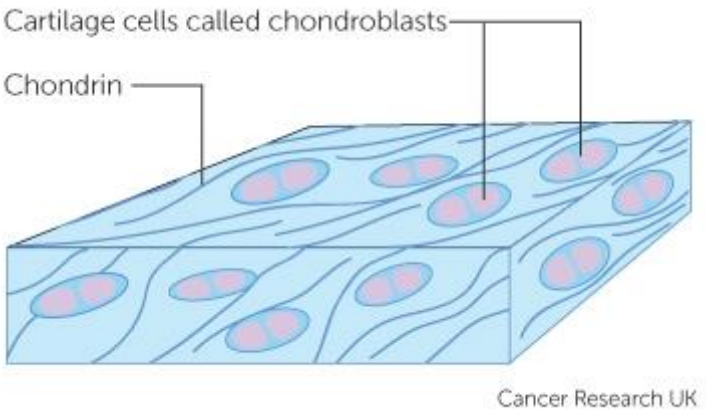
Bone sarcomas

* Sarcomas of bone start from bone cells.

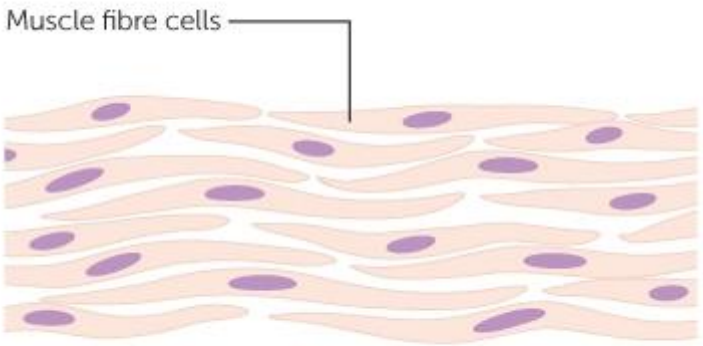


Soft tissue sarcomas

* Soft tissue sarcomas are rare but the most common types start in cartilage or muscle.
* **Cartilage**
* Cancer of the cartilage is called chondrosarcoma.
* **Muscle**
* Cancer of muscle cells is called rhabdomyosarcoma.



Cancer Research UK



Cancer Research UK

The physical examination

* inspection;
* palpation;
* auscultation.

Additional examination

* Endoscopy.
* Cytology (swabs, aspirates).
* Histology (biopsy).
* X-ray investigations.
* Radioisotope mthods (scanning, scintigraphy).
* Ultrasonography.
* Computerised axial tomography.
* Laboratory tests (blood cell morphology, enzyme activity etc, as indicated).

Theories throughout history (Cancer causes)

* **Humoral theory.** Hippocrates believed that the body had 4 humors (body fluids): blood, phlegm, yellow bile, and black bile. When the humors were balanced, a person was healthy. Too much or too little of any of the humors caused disease. An excess of black bile in various body sites was thought to cause cancer. This theory of cancer was passed on by the Romans and was embraced by the influential doctor Galen's medical teaching, which remained the unchallenged standard through the Middle Ages for over 1,300 years. During this period, the study of the body, including autopsies, was prohibited for religious reasons, which limited progress of medical knowledge.

Theories throughout history (Cancer causes)

* **Lymph theory.** Among theories that replaced the humoral theory of cancer, was the formation of cancer by another body fluid, lymph. Life was believed to consist of continuous and appropriate movement of the fluid parts of the body through the solid parts. Of all the fluids, the most important were blood and lymph. Stahl and Hoffman theorized that cancer was composed of fermenting and degenerating lymph varying in density, acidity, and alkalinity. The lymph theory gained rapid support. The eminent Scottish surgeon John Hunter (1728–1793) agreed that tumors grow from lymph constantly thrown out by the blood.

Theories throughout history (Cancer causes)

* **Blastema theory.** In 1838, German pathologist Johannes Muller demonstrated that cancer is made up of cells and not lymph, but he believed that cancer cells did not come from normal cells. Muller proposed that cancer cells developed from budding elements (blastema) between normal tissues. His student, Rudolph Virchow (1821–1902), the famous German pathologist, determined that all cells, including cancer cells, are derived from other cells.

Theories throughout history (Cancer causes)

* **Chronic irritation theory.** Virchow proposed that chronic irritation was the cause of cancer, but he falsely believed that cancers "spread like a liquid." In the 1860s, German surgeon, Karl Thiersch, showed that cancers metastasize through the spread of malignant cells and not through some unidentified fluid.

Theories throughout history (Cancer causes)

* **Trauma theory.** Despite advances in the understanding of cancer, from the late 1800s until the 1920s, trauma was thought by some to cause cancer. This belief was maintained despite the failure of injury to cause cancer in experimental animals.

Theories throughout history (Cancer causes)

* **Infectious disease theory.** Zacutus Lusitani (1575–1642) and Nicholas Tulp (1593–1674), 2 doctors in Holland, concluded at almost the same time that cancer was contagious. They made this conclusion based on their experiences with breast cancer in members of the same household. Lusitani and Tulp publicized the contagion theory in 1649 and 1652, respectively. They proposed that cancer patients should be isolated, preferably outside of cities and towns, in order to prevent the spread of cancer. Throughout the 17th and 18th centuries, some believed that cancer was contagious. In fact, the first cancer hospital in France was forced to move from the city in 1779 because people feared cancer would spread throughout the city. Although human cancer, itself, is not contagious, we now know that certain viruses, bacteria, and parasites can increase a person's risk of developing cancer.

* **Questions for discussion of the lecture**

* 1. Theories of carcinogenesis.
* 2. Antitumor resistance of the body.
* 3. Biological characteristics of tumor tissue.
* 4. Deontological aspects of the diagnosis of cancer.
* 5. Features of the use of stereolithographic models of the skull for topical diagnosis of tumors.

Thank you for attention!