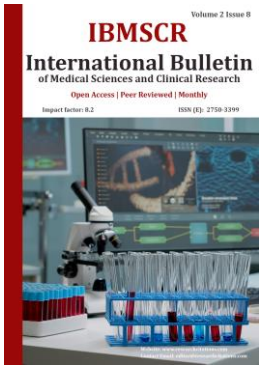

BIOCHEMICAL CHARACTERISTICS OF TUMOR CELLS

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https://doi.org/10.5281/zenodo.7711933

Abstract: Currently, oncological diseases take the second place after diseases of the cardiovascular system. This means that the morbidity rate among the population is 80%. The main reason for this is: radioactive radiation, chemical compounds and viruses.

Key words: Sarcoma, Carcinoma, Hemablastosis, carcinogens, oncoviruses, reparation, proto-oncogenes

Introduction: Tumor cells cause a lot of damage to the body. It also has the ability to destroy tissues. It invades tissues and organs and multiplies according to its nutrition. Currently, it is the most common tumors include prostate cancer, breast cancer, liver cancer, uterine cancer, and skin diseases.

Background: Tumors are a group of genetic disorders characterized by uncontrolled cell growth. According to the method of spreading in the body, they are divided into 2 groups: safe (local tumors that do not grow into neighboring tissues) and dangerous (those that have the characteristics of tissue invasion and can metastasize to other parts of the body) 'smas). More than 100 different types of cancer are known. More than 50% of all diagnosed cases of the disease are lung, breast, colon and rectal, prostate, uterine and ovarian cancers. Tumors are divided into the following groups depending on which tissue cells they develop from: carcinomas (formed from ectoderm and endoderm cells), sarcomas (developed from mesoderm cells) and hemoblastoses (tumors that arise from cambial cells of hemopoietic and lymphatic tissues). . The leading place in the occurrence of cancer in people is occupied by environmental factors - lifestyle, food products, etc. The rest is caused by diseases and genetic changes in the genome that increase the risk of developing tumors. Factors that stimulate tumor formation are called carcinogens. They can be divided into three large groups: radiation, chemical compounds and viruses. Ultraviolet, X-rays and y-rays damage DNA, have mutagenic and carcinogenic effects. Under the influence of radiation, purine sites, single- or double-strand breaks, and additional bonds can appear in the DNA molecule. Pyrimidine dimers can be formed under the influence of UV light. The high incidence of carcinoma and melanoma in Australia and New Zealand is related to ultraviolet rays, the increase in the incidence of Leukosis among Japanese people after the atomic bombings in Japan, and the high incidence of lung cancer in miners working with radioactive ores indicate the harmful

effects of radiation. proves. Most of them are procarcinogens that cannot directly damage the genetic apparatus of the cell, and they turn into substances of a carcinogenic nature under the influence of the microsomal oxidation system in the liver. The resulting carcinogens interact with nucleic acids and protein molecules, disrupt the work of regulatory mechanisms of cells and lead to the development of tumors. Transformation of cells under the influence of carcinogenic substances is called chemical carcinogenesis and stimulates tumor cells under the influence of chemicals. The body has various defense mechanisms. For example, DNA damage caused by environmental factors is repaired by the repair system. If the damage in the DNA molecule remains unrepaired, then a mutant cell appears and it usually undergoes apoptosis. Disruption of these mechanisms leads to cell transformation and neoplasia. The most dangerous chemical carcinogens are polycyclic aromatic hydrocarbons such as benzanthracene, benzpyrene, 7,12-dimethylbenzanthracene, and chemical compounds containing condensed aromatic rings. Alkylating and acylating substances can interact with nucleophilic amine and hydroxyl groups of DNA, damage the structure of genes and cause tumors. Compounds such as vinyl chloride, some drugs used in the treatment of tumor disease, or immunosuppressants (cyclophosphamide, bisulfan, diethylstilbestrol) can cause secondary tumors in some patients. In addition, differentiated cells have the ability to control cell division, they are from tissue boundaries does not come out and does not invade, this is due to contact braking. This property is lost in neoplastic cells. Morphologically, they are slightly larger than usual, the nuclear-cytoplasmic ratio is changed, mainly polyploidy or aneuploidy is observed. Tumor cells have a low adhesion ability, which allows them to grow freely without sticking to the surface of other cells and form a large number of layers.

Oncogenes, proto-oncogenes and tumor suppressor genes

Proto-oncogenes are genes responsible for the development of the organism. They encode proteins that play a central role in controlling the processes of growth and development of the organism. Oncogenes are genes responsible for the development of tumors. Suppressor genes are genes that inhibit the processes of cell division and development. These include the following genes: pbl, 1053, p21, p16, P15, wpl. When normal cells fuse with tumor cells, non-malignant hybrid cells are formed. It follows that normal cells have special genes whose protein products suppress the replicative potential of cells and prevent the development of tumors. They are called suppressor genes or anti-oncogenes. During malignant transformation, the function of these genes is lost and the control of cell proliferation is derailed. Currently, more than 10 suppressor genes (pbl, p53, p21, p16, P15, wtl, etc.) have been identified, which encode proteins that inhibit abnormal cell growth and transformation.

Mechanisms of neoplastic transformation

More than 100 different genes and about 10 suppressor genes are involved in the regulation of cell growth and differentiation. Neoplastic transformation is not the result of a single event, but a multi-stage process. Currently, 5 main mechanisms of turning proto-oncogenes into oncogenes have been identified: a) insertion of new promoters into DNA in the genome; b) appearance of new enhancer sequences; d) gene amplification; e) point mutations; f) Chromosome translocation.

Basic principles of diagnosis and treatment of tumor disease

Tumor markers (tumor markers) are compounds (proteins, biologically active peptides, hormones, enzymes and metabolites) synthesized by tumor cells or normal cells in response to tumor development. Oncology is examined in blood or other fluids in the body, and the

population is screened for tumor diseases, and in the clinical stage, it is used as a prognostic factor in assessing the patient's condition and monitoring the effect of treatment, as well as to determine the recurrence of the disease. restricts the growth of sma cells.

Conclusion: Based on the above rates, it can be seen that tumor cells are the cause of the worst oncogenic diseases. , we are confident that in the future, we will definitely conduct the correct treatment and its epidemiology.

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