Tumor immunity

Lecture 13

Tumor immunity exists

- Proof of reactions of immunity to tumor
  - spontaneous regression of some tumors,
  - high incidence of tumors in immunodefficient patients,
  - antibodies and T lymfocytes reactins in some tumors
  - annimals ares successfully immunised against some tumors,
  - good prognosis in tumors with strong lymphoreticular infiltration

Bases of tumor immunity

- The reaction of immunity is based on reaction to foreign antigen
- Tumor must be recognised as foreign – endogennous antigen on the surface of self cells MHC I – Ts, Tc, NK
- *Alteration* of cell antigens during tumorgenesis (lack of MHC I – desactivation of KIR, new antgiens activation of KAR): activity of membrane molecules – new or supression of membrane proteins important for recognition and activation)

- Induced tumors – neo-antigens
- Spontanneous tumors – poor immunogens

Immunity against tumors

Nonspecific and specific, humoral and cellular – influence the growth and progression of tumors

Escape to immune mechanisms

Tumor

– does not present neoantigens that are immunogenic,

– does not express co-stimulating molecules, that activise T cells

– poor cooperation with MHC

Early stages – small amount of antigens., rapid growth – malignant growth – lack of apoptosis - rapid overload of immune system

Some tumors produce

- immunosuppresive substances or
- induce production of suppresor cells or
- antigens that bocks antibodies of T cells reactiong with tumor

Tumor antigens

TAA – tumor associated antigens

- oncofetal antigens – reemergence of embryonal proteins newly produced or present on membranes

AFP – alfafetoprotein,

CEA –carcinoembryonal antigen

TATA – tumor associated transplantation antigens

– neo antigens responssible for rejection

– on virus induced tumors – surface antigens on cells of tumors caused by oncogens from viruses

TSTA – tumor specific transplantation antigens

– na chemically induced tumors – heterogennous antigenic structure (two tumors induced by the same chemical substances or in the same individual have scarecely common specific antigens)

Imunotherapy of tumors

- Active and passive increase of nonspecific immunity

Active nonspecific – BCG, *Propionibacter acnes*

specific – killed tumor cells and extract, recombinant antigens, idiotypes, costimulationg molecules

Passive nonspecific – LAK cells, cytokines

pecific – antibodies alone or bound on drugs, T cells

- Immunopotentiating substances (modification of biological response) – bacterial products (BCG – activation of macrophages and NK cells via cytokines),

  - synthetic substances (pyran – induction of interferon production)

  - cytokines (interferon, TNF – activation of macrophages)

- Substances activation macrophages and NK cells, stimuliting T lymfocytes and production of cytokines