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"Correa" cascade has high level of induction in transforming into non invase gastric cancer.

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A115

Epidemiology of malignant neoplasms of the oral cavity and pharynx in the territory of the Chelyabinsk region

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The Chelyabinsk region is a classic example of the technologically-saturated region. The index of pollution of atmospheric air is estimated as high. The Chelyabinsk region is among the areas of increased cancer risk. The incidence of head and neck cancer is steadily increasing, accounting for 20–25% of all cancer cases in Russia. Oropharyngeal cancer makes up 5.1% of all cancers.

Materials and methods: The object of the study was the population of the Chelyabinsk region. The analysis was conducted according to the materials of the annual reports of the statistics department of the Chelyabinsk district oncology dispensary.

Results: Out of the total cancer cases for the population of Chelyabinsk region in 2014, oro-pharyngeal cancer comprised 2.06%, including cancers of the lip (0.35%), tongue (0.47%), major salivary glands (0.22%), other unspecified parts of the mouth (0.52%), oropharynx (0.33%), nasopharynx (0.1%) and hypopharynx (0.07%). From 2008 to 2014, the incidence of oral and pharyngeal cancer among adult population of Chelyabinsk city and Chelyabinsk region showed an 8.8% increase. In the period from 2011 to 2014, the incidence of oral and pharyngeal cancer tended to increase, the overall rise being 71.8%. It should be noted that the oral and pharyngeal cancer incidence was 3 times higher in males than in females in 2013 and 2 times higher in 2014. One of the main indicators that determine the prognosis for the development of cancer, is the extent of tumor at time of diagnosis.

Out of the total cancer cases for the population of Chelyabinsk region in 2014, cancer of the oral cavity comprised 1.33%, pharyngeal cancer 0.6%, lip cancer 0.13%, ranking the 17th, 19th and 24th place respectively among the causes of death from all cancers. Analyzing the dynamics of mortality from cancer of the oral cavity and pharynx during the study period, it was revealed that the mortality rate increased by 0.7%.

Conclusion: Head and neck tumors are a rare group of clinically and biologically diverse neoplastic diseases. Among the residents of the Chelyabinsk region, men are 2–3 times more susceptible to cancer of the oral cavity and pharynx than women. High mortality rate is due to late referral of patients to specialized clinics; most head and neck cancer patients are diagnosed at advanced stages.

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P83

Biochemical markers and clinical symptoms in pancreatic cancer patients

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Background: To evaluate the clinical symptoms in pancreatic cancer patients (PCa) and compare some biochemical blood serum parameters in patients with different pathology of the pancreas (PCa, acute (OP) and chronic pancreatitis (CP)).

Materials and methods: During a one-time clinical research on the type of "series of cases" 130 patients were examined (42 patients with OP, 81 – CP and 7 patients with PCa). The diagnosis of PCa, OP, CP was verified by clinical and instrumental methods. Glucose, cholesterol, triglyceride and bilirubin serum levels were determined by ELISA.

Results: The mean age of patients with PCa was 63.6 ± 4.9 years, morbidity duration of PCa – 3.5 ± 1.1 months. Among patients with PCa, 83.3% of people – smoked, 16.7% – smoked every day. Half of the respondents PCa patients noted that over the last year they did not drink alcohol; 16.7% of people – drank alcohol several times a year, and 33.3% of patients consumed alcohol 1–2 times a month. BMI of PCa patients was equal to 26.3 ± 3.5 kg/m^2, in OP patients – 23.8 ± 1.0 kg/m^2, in CP patients – 26.3 ± 0.6 kg/m^2, $p > 0.05$. In this case, 85.7% of PCa patients noted a significant decrease in body weight (11.7 ± 6.0 kg) for 3–4 months after the onset of symptoms. There was no pain in 42.8% of PCa patients, and frequent pain noted only in 28.6% of persons. Among CP patients, frequent and persistent pain noted in 65.5% of patients and among OP patients in 48.6% of cases. All PCa patients experienced pain in the right upper quadrant. Pain was of low intensity in 75% of cases and moderate in 25% of cases. Elimination of pain was observed in half of the PCa patients, and 1/4 of patients continued to experience pain. Episodes of nausea and vomiting noted in 25% of PCa patients. Bloated feeling in the stomach and overflow were noted in 42.8% of the all surveyed PCa persons. The level of glucose in PCa patients exceeded the normal limits and was significantly higher compared to that in OP and CP patients (8.5 ± 1.4 mmol/L, 5.4 ± 0.3 and 5.1 ± 0.1 mmol/L, respectively, $p < 0.05$). Hyperbilirubinemia was detected in PCa patients – 89.9 ± 27.5 μmol/L; in OP and CP patients bilirubin levels were 32.2 ± 11.0 and 13.4 ± 1.8 μmol/L, respectively, which were significantly lower than those in patients with PCa, $p < 0.05$. Triglyceride levels did not differ in patients with different pancreas diseases (PCa – 1.7 ± 0.3, CP – 1.86 ± 0.1 and OP –1.88 ± 0.11 mmol/L, $p > 0.05$). However, the total cholesterol in CP patients was significantly higher than that in PCa and OP patients (5.8 ± 0.1, 5.0 ± 0.6 and 4.1 ± 0.2 mmol/L, $p < 0.05$). In PCa patients, the elevated levels of some markers of cholestasis and hepatocyte injury were also found: ALP – 185.0 ± 12.7 IU/L, ALT – 108.4 ± 33.5 IU/L, AST – 85.3 ± 31.5 IU/L, amylase – 44.9 ± 14.9 IU/L, fibrinogen – 2696.6 ± 398.6 g/L.

Conclusion: The combination of nonspecific clinical signs (pain, dyspepsia) with biochemical markers of biliary pathology and endocrine pancreatic insufficiency – of PCa patients demonstrates the obligatoriness of differential diagnostic pancreatic and biliary pathology in their earlier stages.

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P119Cell aggregation increases drug resistance of acute myelomonocytic leukemia cells

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Acute myelomonocytic leukemia (FAB M4) is one of the most common forms of acute myeloid leukemia (AML). This AML form is characterized by rapid accumulation transformed myeloblasts and monoblasts in bone marrow, with the rapid suppression of normal hematopoiesis. Bone marrow microenvironment is one of the main factors determining drug resistance of leukemic cells. It is known that the adhesion of leukemic cells to mesenchymal stem cell and bone marrow extracellular matrix (laminin, collagen) enhances their drug resistance. However, it remains unknown whether the emergence of drug resistance when cell–cell contacts are formed only between leukemia cells, without the involvement of bone marrow stromal elements. We studied the role of cell aggregation in drug resistance of leukemic cells. We used the bone marrow mononuclear cells (BMMC) isolated from the patients with acute myelomonocytic leukemia. For the formation of multicellular aggregates, BMMC were cultivated in 96-well plates coated with 1.5% agarose. We showed that resistance of BMMC to bortezomib, doxorubicin and fludarabine in multicellular aggregates was increased. In three-dimensional multicellular aggregates of BMMC index IC50 for bortezomib, doxorubicin and fludarabine was 7 ± 1 ng/ml, 1 ± 0.4 mkM and 0.8 ± 0.05 mkM, respectively. In control condition, index IC50 bortezomib, doxorubicin and fludarabine was significantly lower, 2 ± 0.5 ng/ml, 0.3 ± 0.05 mkM and 0.07 ± 0.001 mkM, respectively. In multicellular aggregates of BMMC number of mitotic cells and expression of Ki-67 protein were not significantly different from the control. It has also been shown that cells in multicellular aggregates increased expression antiapoptotic protein Bcl-2. Suppression of BMMC aggregation by culturing the cells in medium containing 0.9% methylcellulose resulted in decreased IC50 index for bortezomib, doxorubicin and fludarabine, 2 ± 0.7 ng/ml, 0.12 ± 0.004 mkM and 0.04 ± 0.005 mkM, respectively. Expression of the Bcl-2 protein was also decreased. This work demonstrates the involvement of cell aggregation in the formation of drug resistance phenotype in leukemic cells.

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T33

Blood-based biomarkers for lung cancer

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Blood-derived biomarkers, such as circulating tumour cells (CTCs) and circulating tumour DNA (ctDNA), are a valuable source of molecular genetic data for tumours they spring from. In translational cancer research, the "liquid biopsy" concept has been put forward to denote the detection and molecular characterization of these biomarkers.

The idea of liquid biopsy is based on a hypothesis that profiles of somatic mutations in CTCs and ctDNA are identical to those in the original tumour. Therefore, the mutation status of the source tumour can be revealed through the molecular analysis of the CTCs and ctDNA obtained from the blood. The major advantages of liquid biopsy are an essentially decreased invasiveness (no need for tissue biopsy, surgery or bronchoscopy) and an ability to carry out the analysis at patient's follow up (e.g. to monitor for residual disease).

However, both the CTCs and ctDNA are not abundant in the bloodstream and their capture is technically challenging. Also, due to tumour heterogeneity, the CTCs may not fully represent the entire tumour, while ctDNA is naturally fragmented and degraded, so its utility for genetic analysis may be limited. Finally, the DNA extracted from CTCs and, especially, ctDNA are "contaminated" by DNA from non-tumour cells from the bloodstream raising a challenge of detecting mutant DNA among significantly prevailing wild-type DNA.

Some of these issues can be overcome by using such advanced techniques as BEAMing, digital PCR or ultra-deep sequencing, but their use in standard clinical settings is limited by the need for special equipment and associated costs. Inexpensive and less sophisticated, but still highly sensitive and specific, approaches, such as COLD-PCR or wild-type blocking PCR, are also available to detect "druggable" mutations in CTCs and ctDNA.

Application of these approaches of liquid biopsy in clinical practice may be highly beneficial for personalized care of lung cancer patients.

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A91

Endogenous inhibitors of cysteine proteases and preform of cathepsin B in cancer of reproductive system