

## EVOLUTION OF VISUAL ASSOCIATIONS WITH THE SOUNDS OF DIFFERENT HEIGHTS.

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Nowadays synesthesia is the subject of active learning.

**Materials and methods:** 83 students of 3 courses GRSMU was asked to listen to two sound sinusoidal signals with frequency 80 and 1280 Hz. Further, it was asked to choose the most suitable characteristics of each sound of the three series of associations: 1. the dark-light, 2. bright-dim, 3. white-black-red-yellow-green-blue. Also there have been prescribed to respond "not associated" and "own version".

**Objective:** to evaluate the visual association with a low (80 Hz) and high (1280 Hz) sinusoidal sound signals at 3rd year course students.

**Research results:** for a row "dark-light": low sound 82% of respondents thought the dark, 15% - light, among 2% it didn't cause any associations, one man offered version of "gray". High sound 61% of respondents identified as "light", 20% - as "dark", 16% of the association were absent. According to second row: 87% considered low sound as a dim, as a bright - 9%, 5% had no associations. For high sound proportions were reversed with almost complete coincidence of numbers: 84% chose "bright", 9% - "dull", 6% - without association. The proportion of color choices for low sound was the following: white - 2%, black - 57% red - 12%, yellow - 5%, green - 1%, blue - 17%, not associated with the color - 2%. For high sound: white - 18%, black - 2%, red - 28%, yellow - 32%, green - 5%, blue - 6%, not associated with the color - 7%. For the sample 80 Hz selectable median wavelength (the average value was taken for each color) amounted 510 (445; 725) nm (green), and for 1280 Hz - 565 (565; 725) nm (yellow). The difference in the average value of selected wavelength between the two samples was statistically significant (Mann-Whitney test,  $p = 0.038$ ).

**Conclusions:** most respondents considered low sound (80 Hz) darker and dimmer than the high sound (1280 Hz). Lower sound often associated with more calm and dark colors, and high - with more active and bright. For low sound a statistically significant more often choose a colors, large displacement to the blue part of the spectrum.

## FEATURES OF SURGICAL TREATMENT OF PANCREATIC CANCER

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**Relevance.** Over the past ten years the number of annually reported cases of pancreatic cancer (PC) in Belarus does not change and is about 800 - 900 people. One-year mortality rate is 78-80%. PC can be treated applying surgery, chemo-, radiotherapy, as well as combined modality and palliative treatment. When choosing a method of treatment of PC into account should be taken the stage of the tumor, its histological type, somatic status of the patient. One of the most important factors is the location of the tumor which defines the different types of operations.

**Objective:** To study the types of surgical treatment of PC based on data of the Grodno Regional Clinical Hospital (GRCH) in 2014.

**Material and Methods:** We analyzed the medical history of 37 patients with verified diagnosis of PC, which were treated surgically at GRCH in 2014. We take into account gender, age of patients, stage of the tumor, histological types and kind of surgical procedures were performed.

**Results.** We observed 37 patients aged over 50 years. Among them predominated men 78,37% (29 cases). Urban residents diagnosed with PC were observed in the case 31(83,78%). Ductal adenocarcinoma was noted in 34 cases(91,89%) patients., cystadenocarcinoma – in 2cases

(5,4%) and carcinoid – in 1 case (2%). In 32 cases (86%) the tumor was located in the pancreatic head, in 2 cases (5,4%) in the body, in 3 cases (8,1%) – in the tail of the pancreas and in 1 case (2,7%) there was a total involvement of the pancreas. In 2 patients (5,4%) was set 1st stage of the disease, in 4 (10,8%) – the 2<sup>nd</sup> stage, in 19 (51,3%) – the 3d stage. and in 14 (37,83%) – the 4th stage of the disease. Among the observed patients radical surgery performed in 11 patients (29,72%) and palliative one (4%). in 21 (56,75) There was the Whipple procedure (proximal pancreaticoduodenectomy) as the most frequently used radical surgery. in 8 patients (21%). Less common was carried out a distal pancreatectomy (2 patients 5,4%). Total pancreatectomy was made only in 1 patient (2,7%). Due to the low resectability, in most cases of PC were used various types of palliative surgery, which had a symptomatic sense and alleviated the patient's condition. There was choledochojejunostomy as the one the most frequently applied produces for surgical biliary bypassing in 11 patient (29.72%). For the same reason in 7 cases (18,9%) were applied percutaneous transhepatic cholangiostomy which were guided by ultrasound and X-ray. In order to eliminate obstruction of the duodenum we had to use anterior gastroenterostomy on a long loop with interintestinal fistula in 3 patients (8%).

**Conclusions:** 1. PC is most common in men over the age of 50 years. The most common site of PC was noted in the pancreatic head (32 cases) 86.48%; 2. The most common PC was diagnosed at the stage III (in cases 19 (51%)). Its predominant histological type was a form of ductal adenocarcinoma (in cases 34 (91%)); 3. The main method of treatment of PC is surgery, which in our patients in 11 cases (29,72%) was aimed at eliminating jaundice. Radical surgery was done in cases 11 (29,72%).

## SIGNIFICANCE OF EXPRESSION METALLOPROTEINASE-2 IN COLON CANCER FOR PREDICTION ADJUSTED DISEASE-FREE SURVIVAL

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**Introduction.** Retrospective analysis of MMP-2 expression studies in patients demonstrates that the presence or an increase in its primary tumor is associated with the ability to invasive growth, metastasis and recurrence [1, 2].

**Purpose.** Determine the value of the expression of MMP-2 in colon cancer for the prediction adjusted disease-free survival of patients.

**Materials and methods.** The material for the study were 72 cases of colorectal cancer, remote from 29 men and 43 women between 2001 and 2011. Immunohistochemical studies were performed using a mouse monoclonal antibody to MMP-2 (ab1828) by standard methods. Quantitation of the level of expression was performed using the program Aperio Image Scope [3]. Statistical analysis was performed using STATISTICA 10.0 (SNAXAR207F394425FA-Q).

**Results.** Patient age ranged from 37 years to 81 years in men - from 46 to 81, women - from 37 to 80 years. Patients older than 60 years dominated (76%). In most cases, the tumor developed in the distal (59 cases - 81.94%). In 11 cases (15.4%) at the time of surgery was diagnosed with stage I cancer, 14 cases (19,4%) - II, 33 (45,8%) - III and 14 (19,4%) - IV. The presence of regional metastases was observed in 44 patients (61.1%). Thus N1 was put in 33 cases, and N2 at 11. The sprouting of tumors into adjacent tissues and organs found in 6 cases (8.3%). At the time of diagnosis in 12 patients (16.6%) had hematogenous metastases, 9 of them had new during 5 years. G1 was detected in 29 (40.2%) patients, G2 - in 26 (36,1%), G3 - 15 (20.8%) and G4 - in 2 (2.9%). During the observation period (from 2001 to 2016) in 24 patients (33.3%) were identified recurrences, with 12 of them relapsed within the first two years after surgery, and the rest within 5 years. On average, the tumor recurred after 2.19 years (1,68-3,39). During the period of observation of 45 patients died (62.5%). Median of general survival was 5.29 years (2,81-11,19). Median of adjusted disease-free survival was 2.5 years (1,6-4,2). We evaluated the expression of MMP-2 in the tumor epithelium and stroma and edge incision. Spearman's rank correlation test showed a positive correlation of pos-