Photodiagnosis and Photodynamic Therapy

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• Abstracts of Laser Helsinki 2010
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As a matter of fact, only 20% of the patients suffering from cholangiocellular carcinoma are operable by the time of the diagnosis being established. Meanwhile the majority of the patients are left with constant transhepatic drainage. The presence of the catheter taken outside the body provides the opportunity to use it for PDT. The first stage of the research included the study of possibilities of tumor radiation treatment through the catheter wall. Optimum transmission spectra of semiconductor He-Ne lasers ($\lambda = 630$–$700\, \text{nm}$) were studied as well as power loss with the light passing through endobiliary catheter walls was measured. By the methods developed PDT was applied for the treatment of 6 patients. Their life time increased compared to the similar patients without PDT application, and the quality of their lives improved.

The data received allow us to come to the conclusion about the efficiency of the method described. Future research will help to determine the ultimate role of PDT in the treatment of inoperable cancer.

**O35** Photodynamic therapy and combined treatment modalities in head and neck cancer patients with Radaclinor

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**Introduction:** The aim of the study was to work out methods of photodynamic therapy (PDT) with Radaclinor (RC) in head and neck cancer (HNC), evaluate the efficacy of PDT and its combination with chemotherapy (CT).

**Materials and Methods:** PDT and fluorescent diagnostics (FD) with RC (RadaPharma, Russian Federation) have been done in 54 patients with basal cell carcinoma (BCC) (14 cases of T1-T2NMO, 40 patients with recurrence of BCC) in frames 1–2 stages of clinical trials and in 11 patients with primary and recurrent oral cancer (OC) (low lip, oral cavity, oropharynx), squamous cell carcinoma (SCC) as pilot investigation. In 3 patients with OC PDT was combined with CT: cytoplatin (1 day, 100 mg/m²) + 5-FU (750 mg, 1–5 days). RC was injected intravenously in dose 0.6–2.4 mg/kg. Detecting of tumor borders, intensity of accumulation of photosensitizer in tumor, normal tissues, visualization was done by Spectral-fluorescent Complex (He-Ne) laser. We used semiconductive laser Milon (wavelength 662 nm) for single surface or interstitial irradiation 3 hours after injection, light dose 100–300 J/cm². Restricted light regimen was recommended for 5 days.

**Results:** Fluorescence contrast was 2.0–6.2, the intensity of fluorescence using doses 1.2–2.4 mg/kg comparing to 0.6 mg/kg and in SCC patients was positively higher then in BCC respectively. In 81.5% of patients fluorescence exceeded the clinically detected tumor borders. In 40% patients with multiple BCC and in 2 with OC additional fluorescence zones were found, cytochemical verification have been got in 96.8% FD demonstrated high sensitivity and specificity (more then 95%). No fluorescence of RC was found in normal skin 120 hours after injection. 2 months after PDT we've had complete response (CR) in 74.1%, partial response (PR) in 25.9% in BCC. OC patients were less sensitive to PDT: CR in 3 patients with low lip cancer (27.2%), PR in 27.2%, stabilisation in 36.5%.

**Conclusion:** We show pronounced efficacy of PDT with RC for HNC of different localization and histology both as single and combined treatment without increase of toxicity. The efficacy of PDT in BCC was higher then in SCC. FD provided significant information about disease advance, allowed identification of subclinical lesions, demonstrated high sensitivity and specificity. Main side effect is short-term increase of skin sensitivity to direct sunlight. As a result of investigation RC have got federal approval in Russian Federation for BCC.

**034** Facilities of photodynamic therapy application in life quality improvement for the patients with tumorous hollow organs permeability derangement

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This work presents the clinical experience of Photodynamic Therapy (PDT) application for treatment of tumors hollow organs. For PDT to be carried out photosensitizers of second generation (phototiazene, radoxclinor, photolone) as well as made in Russia Arcus-2 and Milon-Lachta semiconductor lasers with the wave length of 662 nm were used. The first group included the patients with inoperable cancer of trachea and main bronchi where the method of PDT was used. The treatment was carried out in complex for 9 patients aged from 42 to 72. 6 patients were stated to have inoperable tumors and they received radiotherapy and/or chemotherapy, however after the treatment recurrence of the disease took place. In 3 other cases large scale crippling operation was needed. According to this fact the decision was taken to apply PDT in this case. One of the patients had adenocytic cancer of trachea. After PDT no signs of disease recurrence were found during 3 subsequent years of observation. One woman after pneumonec trophy who had the occurrence of malignant carcinoid of her only lung for 4 years to follow had preserved quite appropriate lumina of respiratory tracts which determined satisfactory quality of life. The signs of dynamic tumor growth were absent.

Four patients were under dynamic bronchoscopic observation had marked regress of pathologic process from 1 to 1.5 years and the diameters of their respiratory tracts remained satisfactory for adequate ventilation. 3 patients died due to the progress of their principal malady in the course of 1 year from the beginning of treatment. Life time of the two thirds of the patients with cancer of trachea and main bronchi was prolonged and its quality was obviously increased in such cases when other contemporary methods applied were not proved effective.