Exp Oncol 2008
30, 2, 164–165

Experimental ONCOLOGY

5th INTERNATIONAL CONFERENCE ON CANCER PREVENTION SUMMARY

St. Gallen, Switzerland, March 6–8, 2008

More than 180 international experts from 30 countries, including 10 participants from Kiev, R.E. Kavetsky Institute of Experimental Pathology, Oncology and Radiobiology, met in St. Gallen, Switzerland for a three day conference to discuss the important issues of cancer prevention. The significance of problems highlighted during the Conference is doubtless, since "the worst forecast tells us that in 2030 world-wide there could be 27 million new cases of tumours and as many as 17 million deaths due to cancer" (**Dr. F Cavalli**). The conference was opened by **Prof. H.-J. Senn** (MD, Conference-Co-Chairman and Local Organizer), who stressed that this Conference provides an "accumulated knowledge and growing interactions between molecular genetics and biology, epidemiology and clinical cancer prevention", and "offers a comprehensive scientific discussion forum for the development of more rational cancer prevention for the future".

10 sessions of the Conference were devoted to the various aspects of cancer prevention: cancer prevention politics, the scientific-and-epidemiological base, cancer prevention-therapy convergence, tobacco and nutrition, genetics and vaccines, cancer prevention and target organs: breast, digestive tract and prostate cancer and metabolic aspects of cancer prevention — best abstract and question forum. Among the awarded reports was a research performed in R.E. Kavetsky Institute "Effect of hyperhomocysteinemia on NMU-induced rat mammary tumorigenesis" (**Chekhun V., Pryzimirska T., Kovtonyuk O.** *et al.*).

A number of lecturers reported on their experience in prevention of some type of virus-associated types of cancer, in particular, vaccination against papillomavirus (HPV) infection — cervical cancer prophylaxis in the USA, Bethesda (**Schiller J.T.**), vaccination against hepatitis B or C virus (HBV or HCV) — hepatocellular carcinoma in Thaiwan (**Chang M.H.**). The data obtained by these researchers confirmed that HPV, HBV and HCV immunization may be applied to prevent above mentioned types of cancer. Some lectures were dedicated to selection of cancer chemoprevention strategies in high risk groups formed using genetic testing method (**Garber J.E.**, USA) and use of cancer specific gene products for diagnosis and immunotherapy targeting (**Sahin U.**, Germany).

One session was devoted to cancer prevention and target organs, and, particularly, breast cancer prevention. **Prof. A. Howell** from Christie Hospital NHS Trust University of Manchester (United Kingdom) reported on the role of stromal components as a key determinant in the morphogenesis, proliferation and cytodifferentiation of the mammary gland. Tumour is composed not only from cancer cells, but also is infiltrated by macrophages, lymphocytes and fibroblasts. The stroma provides vascular supply and specific soluble and extracellular matrix molecules, which are required for tumor growth and progression. Stromal cells play a central role in tumor invasion and dissemination.

Prof. P.H. Brown (Department of Medicine and Molecular and Cellular Biology, Baylor College of Medicine, Houston, TX, USA) presented recent results on breast cancer treatment trials by aromatase inhibitors. It was shown that aromatase inhibitors may be even more effective at preventing breast cancer than selective estrogen receptor (ER) modulators (SERMS). However, nor SERMS, neither aromatase inhibitors could prevent ER-negative breast cancer. Researchers from group of **Prof. G. Cuzik** (Wolfson Institute of Preventive Medicine, Centre for Epidemiology, Mathematics and Statistics, London, UK) shown that the use of aromatase inhibitors for early breast cancer could reduce the rate of ER-positive breast cancer by 75%.

The reports, presented in poster session, were devoted to the role of screening program at early breast cancer diagnostics (**Kozlova N.** *et al.*, Russia) and the use of genetic counselling for families with higher incidence of breast cancer (**Capasso L.** *et al.*, Italy); the estimation of the BRCA1 and BRCA2 mutations (**Boroday N.** *et al.*, Ukraine; **Hu Z.** *et al.*, China); the use of Torimefene as a reference drug for treatment of breast cancer (**Tarutinov V.** *et al.*, Ukraine).

The most exciting event of 5th International Conference Cancer Prevention 2008 was an International Consensus Finding Roundtable. Roundtable was carried out as panel discussion and evaluation of the evidence concerning cancer preventive properties of aspirin and non-steroidal anti-inflammatory drugs (NSAID's). The attempts were made to find an international consensus recommendation for the use of aspirin in cancer prevention. **Dr. J. Cuzick** from Wolfson Institute of Preventive Medicine (Queen Mary University, London, UK) and **Dr. P. Greenwald** from Division of Cancer Prevention (National Cancer Institute, Bethesda, USA) were selected as chairmen. In discussion enthusiastically participated panellists **Dr. J. Burn** (Institute of Human Genetics, Newcastle University, Newcastle upon Tyne, UK), **Dr. J. Jankowski** (University of Oxford, UK), **Dr. C. LaVecchia** (Instituto di Ricerche Farmacologiche, Milan, Italy), **Dr. F. Otto** (Tumor Center ZeTuP,

St. Gallen,Switzerland), **Dr. M. Pollak** (Department of Oncology, McGill University, Montreal, Canada).

In his lecture "The fundamentals: How Aspirin and NSAID's work" **Dr. M.J. Thun** (American Cancer Society, Epidemiology & Surveillance Research, Atlanta, GA, USA) pointed out that aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) are a chemically diverse group of compounds that share the ability to inhibit the enzymatic activity of cyclooxygenases (COX). Their main pharmacological effects come from blocking the first step in the metabolism of arachidonic acid through the COX pathway, thereby inhibiting the formation of several tissue-specific signaling lipids such as prostaglandins, prostacyclin, and thromboxane A_2. Due to diverse and tissue-specific biological effects, the consequences of inhibiting COX activity can be therapeutic, toxic, or both depending on the dose, drug, and patient characteristics.

Several strategies have been used in efforts to improve the selectivity and minimize the potential toxicity of NSAIDs. One approach, based on the discovery (1991) that there are two distinct isoforms of the COX enzyme, was aimed to develop drugs and treatment regimens that more or less selectively inhibit COX-1 or COX-2. COX-1 is expressed constitutively in virtually all cells of the body, whereas COX-2 is upregulated by cytokines and growth factors in inflammation and in tumour cells of some cancers. Aspirin at low doses (100 mg daily) selectively inhibits COX-1, whereas at anti-inflammatory doses, Aspirin and other traditional NSAIDs (tNSAIDs) such as ibuprofen, naproxen, indomethacin and piroxicam, non-selectively inhibit both COX-1 and COX-2. A number of newer drugs, such as rofecoxib, celecoxib, valdecoxib (collectively called coxibs) were developed to inhibit COX-2 more selectively with the goal of minimizing gastrointestinal toxicity from inhibition of COX-1. However, the cardiovascular toxicity of the selective COX-2 inhibitors, resulting from their inhibition of prostacyclin in vascular endothelium, essentially precludes their long term use for cancer prevention. Low dose of Aspirin has no systemic effects on COX-2. Thus, remains unclear what dose of Aspirin may be optimal for prevention of colorectal or other types of cancers.

The evidence that NSAIDs interfere with carcinogenesis is clear, but the experts discussed also toxicity of NSAIDs. Only slight or almost no evidence was obtained for NSAIDs ability to reduce of breast cancer risk, but may be it could be applied for prevention of other cancers, e. g. lung cancer. No general recommendation was made by the experts for the regular intake of aspirin. More research has to be done to clarify, which risk groups qualify for cancer prevention with aspirin, which dose might be the optimal, and what could be the best schedule of aspirin intake. The discussion is ongoing and a consensus paper is going to be published.

Editorial Board