8. PDOP POLISH-GERMAN CONFERENCE ON ONCOLOGY PHARMACY

Abstracts

University Education and Practical Implementation in Clinical Pharmacy as a Connection between Pharmacy and Medicine to individualize Drug Therapy

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Clinical pharmacy is an interdisciplinary field of pharmacy creating a connection between pharmacy and medicine in patient care, research, and teaching. It attends to all processes affecting effectiveness and safety of drug therapy. In close collaboration with physicians, nurses, and other health care professionals, clinical pharmacists support processes of dosage individualization in patient care. The research of clinical pharmacy aims at clinical contents of drug therapy optimization and uses case related and epidemiological methods and strategies. This includes for instance electronic devices and pharmacists on the ward. Pharmacy students should be well trained for practical work and research concerning those patient-related fields. A course in clinical pharmacy for advanced students, therefore, addresses therapeutic aspects of polypharmacy and of patients suffering from multimorbidity. This includes the evaluation of those patients regarding individualized data as well as clinical studies and guidelines. Students are trained in basic skills about pharmacoepidemiology and pharmacoeconomy in lectures. Additional lectures in pathophysiology and pharmacotherapy are held in close collaboration with physicians. Ward rounds allow pharmacy students to get in direct contact to real patients. Sessions in drug information services comprise theoretical teaching as well as practical training. During their period of elective study in clinical pharmacy students take part in scientific work on the ward or in community pharmacies. Practioners from hospital, community pharmacy, and industry, and authorities are involved to cover practical aspects of patient-related pharmacy.

Cytostatic Drug Contamination in Pharmacies: An Overview on the current Situation and Improvement Possibilities

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Despite high safety standards in pharmacies where cytostatic drugs are handled, numerous monitoring studies have revealed that contamination of the workplaces and on the external surface of vials with these hazardous compounds still frequently occurs. Recently implemented German and European regulations require regular monitoring of these substances at the workplace because of their carcinogenic, mutagenic and teratogenic effects.

During the Monitoring-Effect Study of Wipe Sampling in Pharmacies (MEWIP) samples from 130 pharmacies were analyzed. 61 % (774 of 1,269 wipe samples) of the investigated surfaces were found to be contaminated with at least one cytostatic drug. Based on the 90^{th} percentiles of 10,152 single results a substance non-specific reference value for surface contaminations in pharmacies of 0.1 ng/cm^2 was established. Other studies suggested for data evaluation the limit of detection or compound specific traffic

light systems on basis of median and 75th percentiles as basis for improvement in occupational safety precautions and for regular contamination controls.

The different concepts will be discussed during the presentation and an actual overview on the current contamination situation in pharmacies and improvement possibilities will be shown. Application of effective cleaning procedures and usage of specially cleaned or packed vials could reduce the contamination level on surfaces significantly.

Novel Analytical Approaches in the Evaluation and Discovery of Cancer Biomarkers

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The knowledge of human genome, proteome and metabolome plays nowadays increasingly important role because of identification of new pathological biomarkers, therapeutic drug targets and even potential new drugs. There is a need for cancer biomarkers with accurate diagnostic capability. The ideal biomarker should be applicable in determining predisposition, early detection, assessment of prognosis, and drug response. Approaches based on advanced proteomics bioanalysis [1] of available biological material and then bioinformatics processing of the large bioanalytical data matrices which could differentiate healthy from cancerous samples are currently of the world-wide point of interests. Instead of looking for single biomarker substances a breakthrough in disease diagnosis may be achieved using systematic information dispersed over many variables, like levels of a number of proteins and/or metabolites at disease *vs.* healthy organism conditions. Current analytical and bioinformatics tools allow detection, identification and functional investigation of several cancer disease-related proteins, metabolites or endogenous substances [2, 3]. Novel proteomics- as well as metabolomics-related analytical research strategies are illustrated focusing on cancer biomarkers' investigations. Examples are given to demonstrate their usefulness in biomarkers searching and selected applications of novel approaches useful during the cancer biomarkers research are discussed, evidencing the increased scientific excitement in that field of interest.

References

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Supporting Patients best in the Future - The Oral Drug Campaign

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Cytotoxic agents block the growth of cancer cells by influencing cell metabolism during the cell cycle so that cell division and reproduction is inhibited. The mechanisms of cytotoxic action are likely to lead to carcinogenic, mutagenic and teratogenic effects. It is suspected that even the smallest doses of cytotoxic agents have an irreversible and cumulative effect and, although they do not have a threshold value, they represent a low but nevertheless clearly defined risk as a consequence.

The danger associated with cytotoxics is based on their genotoxic effect, which cannot be assigned a threshold value.

Over the last few years, impressive progress has been made in the treatment of cancer, not only in research and clinical application but also in clinical and pharmaceutical practice. There has been a massive increase in the number of cytotoxic and supportive drugs for cancer and with the ongoing development of novel therapeutic agents, many of which can be taken orally, it has become increasingly vital that drugs that can be toxic to healthcare workers are prepared, transported and delivered as safely as possible. The role of the hospital pharmacy is paramount in this process.

The quality standard for oncology pharmacy service, developed in Germany, has become the working standard throughout Europe. Rules and guidelines, which may help to ensure uniform safety and quality, need to be defined for all areas involved in handling cytotoxic agents. However, there is still a long way to go before uniformly high standards of safe preparation are achieved across Europe.

The quality assurance and documentation in the diagnosis and treatment of tumors become increasingly important. As the interdisciplinary approaches are standardized in terms of treatment protocols and clinical pathways adequate quality assured multi-professional care of patients with oral cancer chemotherapy is therefore urgently required.

Nationwide training started in Germany already in May 2010, in order to improve the knowledge of pharmacy staff on selected oncological and pharmaceutical topics (drug interactions in oncology, specifically pharmaceutical oncology case studies, side effects of cancer, therapy on the skin and mucous membrane, prophylaxis and treatment of vomiting / nausea and fatigue).

Nearly 20.000 Pharmacists and Technicians in community and hospital, which contribute to increase drug treatment safety in oral cytostatic therapy and provide information and counseling services for people with cancer in pharmacies will be targeted in Germany by ESOP speakers from September 2011 in three main topics in the following month.

Based on the knowledge about tumor, the pharmacology of prescribed oral cytotoxic drugs and the relevant supportive care, patient-specific recommendations can be given and documented.

Physicians and pharmacies together with patients will be able to afford on this basis, an active contribution to improving the pharmaceutical care of cancer patients locally and for the oncology outcomes research as well as to improve the adherence for increasing quality of life while the continuously treatment.

The Role of Integrins in Cancer Development: Therapeutic Implications.

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Integrins belong to the family of cell adhesion molecules (CAM) which play a very important role in flow of information between cells and extracellular matrix (ECM). The ECM provides a structural framework that enable cells to anchor for stationary existence, or to migrate, and influences cell size, shape, and interaction with other cells and tissue formation. Disturbances in CAM function may negatively interfere in the process of cell proliferation, and their transformation.

Cell adhesion to the ECM is predominantly mediated by integrins, the most structurally and functionally diverse family of CAMs which regulate cell-cell and cell-ECM interaction. They

play an important role in cellular physiology and body homeostasis and disturbances in their function are reflected in a number of disease states.
Numerous studies have shown that integrins are up-regulated in some of human cancers. They are active in almost all critical phases of tumorgenesis and regulate important cancer phenomena like migration, invasion, metastasis and angiogenesis.

All this indicates that integrins can be an attractive target for drug design. A number of the integrin antibodies and antagonists have been developed and are now in clinical trials, determining their effect on angiogenesis, metastases and tumor growth.
Some basic information on integrins will be presented during the lecture and integrin inhibitors will be shortly discussed.