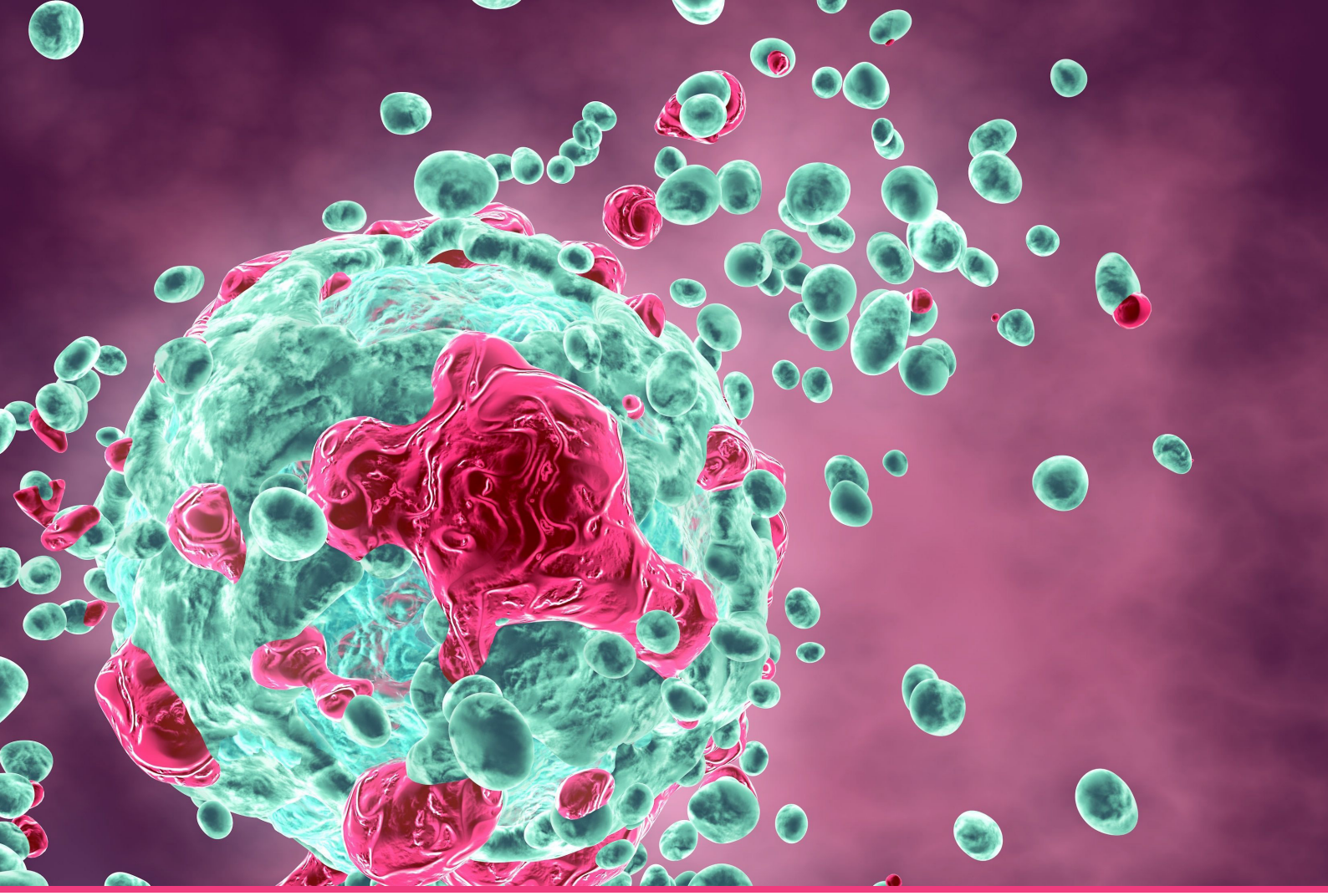

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Proceedings of

3rd International E-Conference on

CANCER SCIENCE AND THERAPY

May 11-12, 2022 | Webinar

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Cyclic peptide ligands as tool for targeting Epidermal Growth Factor Receptor in triple negative breast cancer

A. Aloisio, N. Nisticò, E. Iaccino, S. Mimmi, A. Zimbo, A. Lupia, G. Fiume, I. Quinto
University Magna Graecia of Catanzaro, Department of Experimental and Clinical Medicine, Catanzaro, Italy

The Epidermal Growth Factor Receptor (EGFR) plays a central role in epithelial development and solid tumor progression. Nearly half of triple negative breast cancer (TNBC) overexpressing EGFR showed poor clinical outcomes, acquired drug resistance, and lack of effective targeted treatments. Hence, inhibition of EGFR signaling may be a useful target for the development of tumor therapies. In this regard, peptides derived from phage display screening are a potential tool for tumor targeting and the development of novel drug delivery systems for specific breast cancer tissues.

In this study, we aimed to select by phage display cyclic peptides that specifically bind the overexpressed EGFR on the surface of TNBC cells. The TNBC cell line MDA-MB-231 that overexpress EGFR was used as bait for screening a M13 random peptide library after pre-incubation with EGFR-silenced negative control cells. After three rounds of selection and amplification, thirty-five independent clones were isolated and sequenced. Subsequently, four peptide sequences were identified and chemically synthesized with FITC to evaluate their binding capacity and specificity to TNBC cells by flow cytometry and confocal microscopy. Peptide-EGFR interaction site was predicted by dedicated bioinformatics tools.

Our results indicate that 01cys_EGFR and 06cys_EGFR peptides showed increased MDA-MB-231 cell surface accumulation and internalization; in addition, differential binding capacities for other EGFR-positive tumor cell types were shown. Molecular docking studies revealed that 01cys_EGFR peptide had better binding affinity for the EGFR extracellular domain than 06cys_EGFR. In conclusion, 01cys_EGFR was shown to be a specific peptide for monitoring and targeting EGFR-overexpressing tumor cells.

Supported by MIUR-PRIN 2017MHJJ55_002

Keywords: EGFR, peptides, triple negative breast cancer, phage display, tumor targeting.

Biography:

Annamaria Aloisio is a Post Doctoral researcher at the University “Magna Graecia” of Catanzaro. She is graduated in Medical Biotechnology, master in Stem Cell Biology and Regenerative Medicine, and PhD in Molecular and Translational Oncology, and Innovative Medical-Surgical Technologies. She has a research background with primary human hematopoietic, leukemic and mesenchymal stem cells with particular interest in biochemical, molecular and functional assays. Since 2020 she works on phage display technology for the selection and identification of peptide binders for targeting tyrosine kinase receptors in drug resistant cancer cells.

Precision Oncology : Revisiting the Circulating Tumor Cell Clusters

Dr Vineet Datta
MD FRCP(Glasg) FRCP(Edin) MRCP(UK) MRCEM FIMSA

The global socio-economic impact of cancers is profound. Tissue biopsies have been conventionally used for histopathological studies. Management of cancers based on circulating nucleic acids in peripheral blood (i.e., Liquid Biopsy) has gained prominence. cfDNA obtained from peripheral blood plasma, and sequenced to reveal genomic changes, such as point mutations and copy number variations in genes, relevant to cancers. The clinical relevance and utility of molecular biomarker based tools are evident by their contribution to therapy selection and management and serial monitoring.

Circulating Tumor Cells (CTCs) are cells shed into the vasculature from a primary tumor and may constitute seeds for subsequent growth of additional tumors in distant organs. They have been detected in various metastatic carcinomas for example breast, prostate, lung, and colorectal cancer. CTC clusters are two or more individual CTCs bound together. These clusters have cancer-specific biomarkers that identify them as CTCs. Several studies have reported that the presence of these clusters is associated with increased metastatic risk and poor prognosis. An innovative negative-enrichment approach to yield sufficient cell clusters (C-ETACs) to permit meaningful downstream applications.C-ETACs can be characterized by immunocytochemistry (ICC) profiling for organ-specific and subtype-specific (OSS) antigens, which are routinely evaluated in HPE and ICC, to determine the tissue of origin.

Recent data evaluates the suitability of this approach for adoption in clinical practice because it non-invasively provides diagnostically relevant information. One indicated approach may be intended for symptomatic individuals who have been referred for a biopsy but have not yet undergone the biopsy.

Biography:

Dr. Vineet Datta brings over 20 years of global healthcare experience across clinical patient care, medical assistance, strategic leadership and healthcare consulting. He is a post-graduate in Internal Medicine from JN Medical College, AMU, India, and has held various leadership positions across the NHS, International SOS and Apollo Hospitals. He was awarded Diplomas for Membership to the Royal College of Physicians, United Kingdom (MRCP-UK) and the Royal College of Emergency Medicine (MRCEM), London. Vineet is an elected Fellow the Royal College of Physicians and Surgeons, Glasgow, and possesses the Advanced Pre-hospital Emergency Care Certification from the Royal College of Surgeons, Edinburgh. He currently also serves as the International Advisor to the Royal College of Physicians and Surgeons of Glasgow, in additional to his professional responsibilities.

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EFFECT OF TUMOUR MICROENVIRONMENT ON PATHOGENESIS OF THE HEAD AND NECK SQUAMOUS CELL CARCINOMA

DR. SWAPNA AMOD PATANKAR
Bharati Vidyapeeth Deemed to be University, Dental College & Hospital, Pune, Maharashtra, India

The head and neck cancer (HNC) is considered one of the malignancies with the most severe impact on quality of life of patients, caused mainly by relatively low responsiveness to treatment and severe drug resistance. HNC is a heterogeneous group of tumors arising from the mucosal surfaces of the nasal and oral cavity, oropharynx and larynx. 90% of these tumors are head and neck squamous cell carcinomas (HNSCCs), which represent the sixth most prevalent cancer worldwide.

The tumor microenvironment (TME) is comprised of many different cell populations, such as cancer-associated fibroblasts and various infiltrating immune cells, and non-cell components of extracellular matrix. These crucial parts of the surrounding stroma can function as both positive and negative regulators of all hallmarks of cancer development, including evasion of apoptosis, induction of angiogenesis, deregulation of the energy metabolism, resistance to the immune detection and destruction, and activation of invasion and metastasis. Recent studies have shed light on the effects of microenvironment on initiation and progression of the head and neck squamous cell carcinoma, focusing on oral squamous cell carcinoma, cancer development and progression for better understanding the mechanisms behind different responses to therapy and help define possible targets for clinical intervention.

Keywords: Tumor microenvironment, Head and neck cancer, Tumor metabolism, Epithelial- mesenchymal transition.

Biography:

DR. SWAPNA AMOD PATANKAR, is an Assistant Professor (MDS) in the Department of Oral & Maxillofacial Pathology & Oral Microbiology at Bharati Vidyapeeth (Deemed to be University) Dental College & Hospital, Pune, India. She is currently pursuing Ph.D. in the Faculty of Dentistry. She has an Academic Teaching Experience of 20 years 6 months. She is a certified instructors of American Heart Association for BASIC LIFE SUPPORT (BLS) AND ADVANCED CARDIAC LIFE SUPPORT (ACLS) & till date trained 374 participants. She has carried out numerous Research Projects & has extensive research work on the HIV sero-positive individuals. She has numerous National & International publications to her credit & has also published 2 International Books. She has been invited as GUEST SPEAKER to 06 National Conferences & 03 International Conferences. She has presented 04 YouTube Webinars. She has presented Papers & Posters at National & International Conferences & has won 3rd Prize for Best Scientific Paper Presentation at International Conference on Forensic Odontology (IASR) 2021.

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Polymorphic markers of XRCC1, ERCC5, TP53 and CDKN1A1 genes and disease-free and overall survival after platinum-based chemotherapy in early triple-negative breast cancer

Zavarykina T[1], Kapralova M[1], Brenner P[1], Gordeeva O.[2], Ganshina I.[2], Khodyrev D[3], Khokhlova S[4] and Kolyadina I[4]

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Triple-negative breast cancer (TNBC) is the most aggressive subtype of breast cancer in which there are no special targets for therapy. Therefore chemotherapy is still leading treatment for TNBC including the regiments with platinum drugs. The aim of the work was to study the relationship between polymorphic markers of genes XRCC1 (rs25487), ERCC5 (rs17655), TP53 (rs1042522), and CDKN1A1 (rs1801270) with the efficiency of platinum-based chemotherapy of TNBC.

The samples of blood of 66 patients with TNBC treated with platinum-based chemotherapy were studied. The polymorphic markers of genes were studied using the real-time PCR with fluorescent allele-specific probes. The results were compared with the clinical data (disease-free, DFS, and overall survival, OS) using the Kaplan-Meier method and log-rank test.

Carriage of the T allele of rs25487 XRCC1 was associated with a decrease in the median OS (34.6 months compared to 24.3 months in the absence of the T allele, p = 0.04), and a tendency towards a decrease of DFS (32.6 months after compared with 19.9 months in the absence of the T allele, p = 0.077). In the carriers of the G allele of rs1042522 TP53, the median OS was not achieved, the median follow-up was 37 months, p = 0.17. For rs1801270 CDKN1A1 there were revealed significant differences in DFS in the period from 15 to 60 months of observation (p = 0.046). The same results were observed for rs17655 of ERCC5 gene (p=0.02) in the period from 15 to 60 months of observation.

The relationship between the studied polymorphic markers and DFS or OS was found in patients with early TNBC. Further this could optimize neoadjuvant chemotherapy regimens and avoid unwanted treatment toxicities.

Keywords: triple-negative breast cancer, platinum-based chemotherapy, polymorphic markers

Biography:

Tatiana Zavarykina works in the Emanuel Institute of Biochemical Physics of Russian Academy of Science since 2002. In 2008 defended a Ph.D. thesis. From 2010 works in the molecular oncology field. From 2015 works on the project dedicated to the search for markers of sensitivity to platinum-based chemotherapy of triple-negative breast cancer and ovarian cancer.

COMPARISON OF THE RADIOLOGICAL-ERCP-PATHOLOGICAL RESULTS OF THE PATIENTS WHO HAVE OPERATIONAL WHIPPLE

Ayça Nur DEMİR, Afyonkarahisar Health Sciences University Faculty of Medicine, Afyonkarahisar, Turkey

Mehlika Bilgi KIRMACI, Afyonkarahisar Health Sciences University Faculty of Medicine General Surgery Department, Afyonkarahisar, Turkey

Background: Pancreatoduodenectomy, or the Whipple operation, is one of the most common forms of pancreatic surgery and is increasingly performed for both malignant and benign diseases. For malignancy, the operation is most frequently utilized to resect pancreatic head and ampullary carcinomas, neuroendocrine tumors, and distal cholangiocarcinomas.

Methods: In our study, examining and investigating the data collected from the procedures of 82 patients was discussed. Patient data were obtained from the archive with the permission of the hospital.

Results: When we evaluated the data at hand, whipple operation was applied to 95 patients. 82 patients whose radiological data were available were included in the study. 55 patients are male and 27 patients are female. Benign pathology was found in only 1 of 82 patients. Malignant pathology was detected in 81 patients.

Conclusion: Conclusion: We aimed to examine and evaluate the confirmation of radiological diagnosis-ERCP and pathology diagnoses in this patient group, which is located in an area where biopsy is difficult in terms of pathological diagnosis and requires whipple surgery. In line with this aim, we apply this triple treatment method to our patients. As a result of the treatment, we diagnose these cancers that we mentioned.

Keywords: Whipple, Pancreas cancer, Surgery, ERCP

Biography:

My name is Ayça Nur DEMİR. I live in Turkey. I am studying at Afyonkarahisar Health Sciences University Faculty of Medicine. I am a 5th grade student. I have attended and continue to attend numerous congresses and conferences throughout my university life. I also attend courses and receive training from different fields.I study German and Spanish as well as English education. I have been the editor of the Journal of Pediatric Genetics for 5 years.

PRIMARY CARDIAC LYMPHOMA

Gustavo Lionel Knop
MAYO CLINIC, USA

Primary cardiac lymphoma (PCL) is a non-Hodgkin's lymphoma that occurs only in the heart. It is a very rare condition and is reported to be increasingly diagnosed pre-mortem. We present the case of an 87 years old woman referred with a two-month history of dyspnea and peripheral oedema. The transthoracic echocardiogram (TTE) and the computed tomography (CT) of the chest revealed an 8 cm right atrial (RA) mass. The tumor was excised, and the patient had a favourable immediate postoperative outcome.

Histology results indicated a diffuse type B cell lymphoma.

In general, the prognosis is poor, although patients are very sensitive to chemotherapy. Median survival is 12 months. The preferred localization is the right atrial or ventricular wall (92% of cases), followed by the left atrium and ventricle.

Surgery is usually indicated in the presence of an intracardiac tumor, although resection is usually incomplete due to the invasive characteristic of the PCL.

Once the diagnosis is confirmed by histopathology, chemotherapy is the best treatment option.

Conclusions: Primary cardiac lymphomas are very rare, but they are currently diagnosed more frequently pre-mortem. Absence of extracardiac diseases is associated with moderate survival improvement, but overall, prognosis is very poor.

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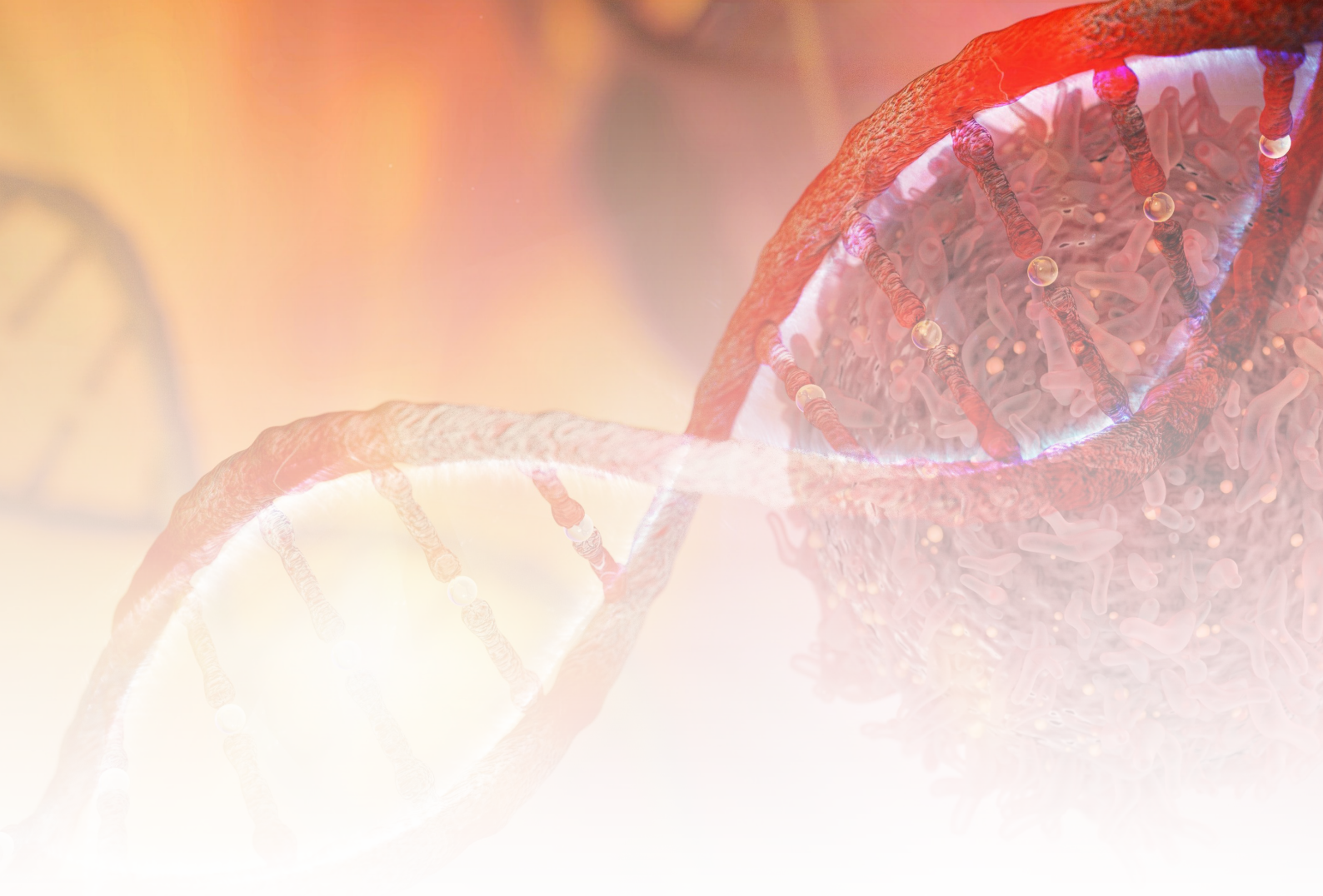

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