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BREAST BRACHYTHERAPY FIXATION SYSTEM: THE PLASTIC TUBE TECHNIQUE

Lurdes Trigo[1] and Nathalie Stas[1]

[1]Brachytherapy Service Department Radiotherapy, Instituto Português Oncologia, Porto Portugal

Objectives: To contain the optimal geometry of breast multicatheter interstitial brachytherapy with the plastic tube technique. *Materials and Methods*: The rules of the Paris System such as parallelism and equidistance of tubes of multiple interstitial implant, either in a triangle or a square pattern, can be difficult to achieve and maintain not only because the softness of the breast but also because individual catheters may become displaced with its mobility. The authors have developed a brachytherapy catheter fixation method resembled to a needle template using IV fluid tubes perforated in the theatre room with an average spacing of 10 – 14 cm according to the breast morphology. The perforated tubes are threaded over the needles to space and stabilize the implant geometry, being the former then replaced with the usual brachytherapy plastic tubes. *Results*: Implant catheters are less prone to displacement when this system connects and spaces the catheters, while its soft material helps avoid the discomfort and pressure injury sometimes associated with hard plastic buttons. *Conclusion:* This manual and individual made brachytherapy device effectively maintains the geometry of multicatheter plastic tube interstitial implants. Stable implant geometries lead to more reliable brachytherapy dosimetry and improve the patient's comfort. This simple, practical, cheap and easily produced technical solution is also applicable to other uses in clinical brachytherapy, such as head and neck sites, extremity sarcomas and abdominal or thoracic tumors.

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TARGETING BAG-1-MEDIATED PROTEIN INTERACTIONS TO OVERCOME BRAF INHIBITOR RESISTANCE

Marion Enthammer[1], Marco Thurner[1], Sana Khalid[1], Hermann Stuppner[2] Ramsey I. Cutress[3] and Jakob Troppmair[1]

[1]Daniel Swarovski Research Laboratory, Department of Visceral, Transplant and Thoracic Surgery, Innsbruck Medical University, Innsbruck, Austria;
[2]Institute of Pharmacy/Pharmacognosy, Center of Molecular Biosciences, University of Innsbruck, Innsbruck, Austria;
[3]Cancer Research UK Centre, Cancer Sciences Division, University of Southampton Faculty of Medicine, Southampton General Hospital, Southampton, UK

The discovery of frequent BRAF mutations in a variety of cancers spurred the interest in both understanding the contribution of deregulated RAF signaling to disease development and the potential use of RAF kinases as therapeutic targets. Our research mainly focuses on deciphering how mutant RAF contributes to transformation and how this knowledge may be exploited for novel therapeutic approaches. Our experiments demonstrated the importance of maintaining mitochondrial Ca^{2+} and ROS homeostasis for cell survival control by mutant and wild type C- and BRAF. BAG-1 has been implicated in the activation of CRAF and may function as a mitochondrial RAF survival signaling hub. To address a possible therapeutic option of targeting the interaction of RAF and BAG we identified and characterized Thio-2. Thio-2 blocked the growth of transformed cell lines but had much weaker effects on untransformed cells. Most importantly, Thio-2 inhibited the proliferation of melanoma cell lines resistant to treatment with PLX4032, an inhibitor of mutant BRAF. Thio-2 interfered with intracellular signaling at the level of RAF but had no effect on the activation of AKT. Thio-2 decreased binding of BAG-1 to Hsc70 and to a lesser extent BRAF *in vitro* and *in vivo*, suggesting a possible mechanism of action. Given that tumors frequently develop resistance to kinase inhibitors during treatment, Thio-2 and related compounds targeting protein-protein interactions may offer promising alternative strategies to currently available therapies.

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THE STUDY OF GENOMIC CONTRIBUTION IN TAIWAN HEAD AND NECK CANCERS

Chia-Wen Tsai[1], Chin-Mu Hsu[1], Wen-Shin Chang[1,2] and Da-Tian Bau[1,2]

[1]Terry Fox Cancer Research Laboratory, China Medical University Hospital, Taichung, Taiwan, R.O.C.;
[2]Graduate Institute of Clinical Medical Science, China Medical University, Taichung, Taiwan, R.O.C.

Compared with Western countries, the incidence rate of head and neck cancer is rather higher in Taiwan, an island with a very high genetic conservation. Thus, genetic studies for Taiwanese are very useful, especially for nasopharyngeal cancer susceptibility evaluation. In addition to Epstein-Barr virus (EBV) infection, certain dietary factors and genetic differences such as single nucleotide polymorphisms (SNPs), which may all contribute to nasopharyngeal cancer carcinogenesis, environmental factors, such as smoking, may also play a role in the etiology of nasopharyngeal cancer. The highlight cancer of this report is oral cancer, which is a commonly diagnosed cancer all over the world. With continuously increasing incidence and mortality for the past two decades, oral cancer has become the fourth most common

cause of male cancer death in Taiwan. The genomic etiology of oral cancer is of great interest but largely unknown. In 2011, ten hallmarks of cancer were summarized in the journal of Cell. Our study focused on four important parts; cell cycle regulation, the DNA repair system for genome integrity, DNA metabolism and stability and, lastly, immune escape. We collected several novel markers among cell cycle regulation (CCND1), DNA repair (XRCC4, XRCC5, XRCC6, EXO1, ATM, hOGG1), XRCC3, DNA metabolism (MTHFR) and immune (IL-10) systems, and studied their role in susceptibility to oral and nasopharyngeal cancer, as well as their possible role in carcinogenesis and personalized pharmacogenomics.

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UNCOMMON LATE RECURRENCE OF A TESTICULAR SEMINOMA WITH A METASTATIC LESION TO COLON

Nikolaos Tsoukalas[1], Nikolaos Salemis[2], Georgios Nakos[3], Georgios Bouboussis[2], Maria Kiakou[1], Evangelia Vogiatzi[1], Andreas Katsimardos[1], Konstantinos Mpallasis[1] and Charalambos Christofyllakis[1]

[1]401 General Military Hospital, Medical Oncology Dpt, Athens, Greece;
[2]401 General Military Hospital, Breast Cancer Surgery Dpt, Athens, Greece;
[3]401 General Military Hospital, Pathology Dpt, Athens, Greece

Aim: The presentation of a rare case of classical testicular seminoma that relapsed with a metastasis to colon 12 years after the initial diagnosis. Case presentation: A 39-year-old man with a past history of testicular seminoma diagnosed 12 years ago (orchiectomy and radiotherapy) presented with pain in the left iliac fossa. Physical examination revealed tenderness in the left iliac fossa and a palpable abdominal mass. The imaging investigations showed thickening of the descendant colon's wall and dimness of surrounding fat. A colonoscopy revealed a pathological mass around 8 cm causing almost complete stenosis of colon at a distance of 40 cm from anus. The patient underwent surgical removal of the tumor that was large (15x10x3.5 cm) with ulcers. Histological examination showed that the mass was extensive metastatic infiltration of classical testicular seminoma with extension to the proximal fat and presence of infiltration and obstruction of venous vessels. However, all resected lymph nodes were free of disease. Tumor markers were negative. A review and comparison of the histological specimens of the primary testicular seminoma and the colon mass took place that confirmed the earlier diagnosis of metastatic infiltration of colon from classical testicular seminoma. The patient received BEP regimen (etoposide-cisplatin-bleocin) chemotherapy with very good tolerance. *Conclusion*: The interesting feature of this case is the metastasis of a classical testicular seminoma to colon 12 years after the initial diagnosis. According to the literature, the incidence of metastases from testicular seminoma to the gastrointestinal system is very small (<5%).

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UNCOMMON SPREAD OF BREAST CANCER WITH METASTATIC INFILTRATION ONLY TO ROTTER'S LYMPH NODES

Nikolaos Tsoukalas[1], Nikolaos Salemis[2], Georgios Nakos[3], Maria Kiakou[1], Konstantina Liosi[1], Evangelia Vogiatzi[1], Andreas Katsimardos[1], Konstantinos Mpallasis[1] and Charalambos Christofyllakis[1]

[1]401 General Military Hospital, Medical Oncology Dpt, Athens, Greece
[2]401 General Military Hospital, Breast Cancer Surgery Dpt, Athens, Greece
[3]401 General Military Hospital, Pathology Dpt, Athens, Greece

Aim: The presentation of a rare case of breast cancer with metastatic infiltration only to ipsilateral interpectoral Rotter's lymph nodes without any other metastases. *Case presentation:* A 42-year-old woman presented with a painful palpable mass in her left breast. Mammography and breast ultrasound confirmed that mass. A wide local excision of the tumor took place. Histological examination revealed the presence of two foci of invasive breast carcinoma with ductal myeloid characteristics, grade III. Immunohistochemisty was negative for ER, PR and HER2. Due to the histological findings, a modified radical left mastectomy with ipsilateral axillary lymph nodes resection took place. Fortunately, no residual disease was found in the surgical specimens. However, in staging work up, a chest CT showed the presence of abnormal swollen lymph nodes at the level of the left thoracic muscles (interpectoral or Rotter's lymph nodes). Initially the FNA of the above lymph nodes was positive for malignant cells. Followed by surgical resection and histological examination revealed extensive metastatic infiltration of the breast carcinoma. Therefore, it was a left breast ductal invasive adenocarcinoma with myeloid characteristics, grade III, "triple negative" and stage IIB (T2b N1 M0). The patient received adjuvant chemotherapy (6 cycles) with the combination of cyclophosphamide, doxorubicin and docetaxel (TAC) with good tolerance and adjuvant radiotherapy with 3D CRT technique in the area of the left breast and ipsilateral supraclavicular and axillary area. *Conclusion*: This case is interesting due to unusual metastatic spread of tumour with metastatic infiltration of the ipsilateral interpectoral or Rotter's lymph nodes despite the fact that the ispilateral axillary lymph nodes were free of metastates and of course there were no