2024

Taipei International Breast Cancer Symposium

台北國際乳癌研討會

Speech Abstract

Speaker:
Prof. Mark Pegram
Topic:
Diagnostic and Therapeutic Considerations in Tumor Microenvironments
Abstract:

In 2024, an estimated 310,720 new cases of invasive breast cancer and 56,500 cases of non-invasive breast cancer will be diagnosed in the U.S., with 42,250 deaths expected. Increasingly, breast cancer is being diagnosed in women under 40. While genetic mutations contribute significantly to breast cancer, the tumor microenvironment (TME) plays a critical role in tumor initiation, invasion, and metastasis. The TME includes immune cells, fibroblasts, adipocytes, and an extracellular matrix (ECM) rich in growth factors and cytokines, all of which influence therapeutic response.

Recent advancements in assessing tumor infiltrating lymphocytes (TILs) demonstrate their prognostic value, with higher TIL infiltration correlating with better outcomes. Newer imaging methods, like multiplexed ion beam imaging (MIBI), provide insight into immune synapse formation between TILs and tumor cells, offering a better predictor of response to immune checkpoint therapies than traditional PD-L1 IHC.

The role of cancer-associated adipocytes, especially in obese patients, further underscores the complexity of the TME, as these adipocytes impact immune responses and metabolic reprogramming in tumors. Additionally, therapeutic strategies targeting both the immune system and specific oncogenes, such as CD47 and HER2, are being tested. At Stanford, ongoing trials aim to evaluate a bispecific anti-CD47/anti-HER2 antibody, while antibody-drug conjugates, such as an anti-HER2 conjugated to a STING agonist, offer promise in minimizing off-target toxicity.

Finally, cancer-associated fibroblasts (CAFs) are essential in shaping the TME by producing ECM proteins that foster tumor progression, immune suppression, and metastasis. This presentation will explore the multifaceted role of the TME in breast cancer pathogenesis, as well as its diagnostic and therapeutic implications, focusing on cell-cell and cell-ECM interactions.