**Incremental Increase in VEGFR1+ and VEGFR2+ Hemangiogenic Cells Predicts Relapse and Tumor Response in Breast Cancer Patients**

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**Breast Cancer Relapse and Metastasis**

- **Preclinical Models of Metastatic Progression**
  - **Angiogenic switch**
  - **HPC Phenotype:** VEGFR1⁺, CD45⁺, CD34⁺
  - **HPC Phenotype:** VEGFR2⁺, CD45⁺, CD133⁺

**Flow Cytometry**

- **Results: Baseline Characteristics of Combined Studies**
  - Number of patients: 132
  - Stage of disease:
    - Stage 1: 16 (12.3%)
    - Stage 2: 27 (20.5%)
    - Stage 3: 47 (35.8%)
    - Stage 4: 42 (31.8%)
  - **HPC Phenotype:** VEGFR1⁺, CD45⁺, CD34⁺
  - **HPC Phenotype:** VEGFR2⁺, CD45⁺, CD133⁺

**7 Patients Without Objective Disease Relapse on Study**

**Conclusions:**

1. Circulating VEGFR1+ HPCs and VEGFR2+ EPCs predict therapeutic response in metastatic breast cancer patients receiving systemic therapy.
2. An identical pattern of HPC and EPC surges was seen in patients without evidence of disease who relapse.
3. Our data support preclinical models of the angiogenic switch in breast cancer patients.
4. Changes in HPCs and EPCs may serve as biomarkers of early relapse and a therapeutic target to prevent clinical relapse.
5. Clinical trial testing VEGFR1/2 antibodies in metastatic breast cancer patients ongoing at Weill Cornell Medical College. (ClinicalTrials.gov identifier: NCT01234402)

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