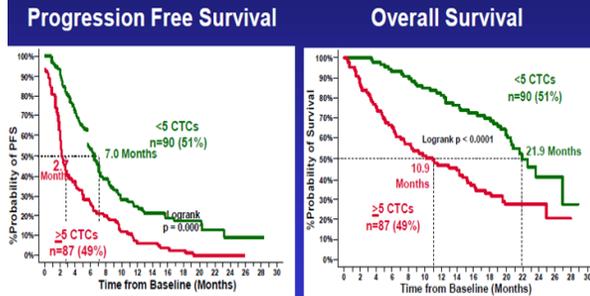


Advantages of CTC Count

Prognostic Value of CTCs BEFORE Starting a New Line of Therapy



corroborative test like the 3-6 tumor gene expression analysis of whole blood to capture non-ideal CTC phenotypes with metastatic predisposition. In the study of Cristofanilli et al. 2004, involving 177 metastatic breast cancer patients, less than or equal to 5 CTCs per 7.5 ml blood would translate to 7 months progression free survival and 21.5 months overall survival.

What is the advantage of CTC analysis as a blood test?

Blood test is safe and can be performed at many points during the different stages of the disease, whereas analysis of solid tumors requires invasive procedures that strongly limits the patient compliance. The ability to monitor across time as the disease progresses allows the development of therapeutic modifications, with the potential of improving the patient's quality of life.

The MDCTL Facilities



Contact Information

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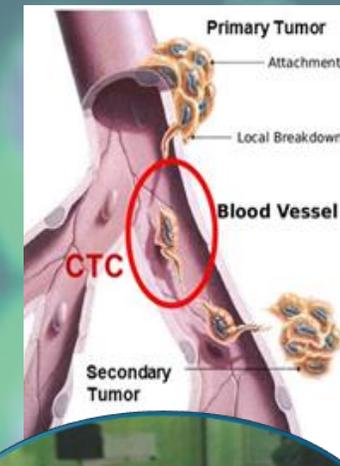
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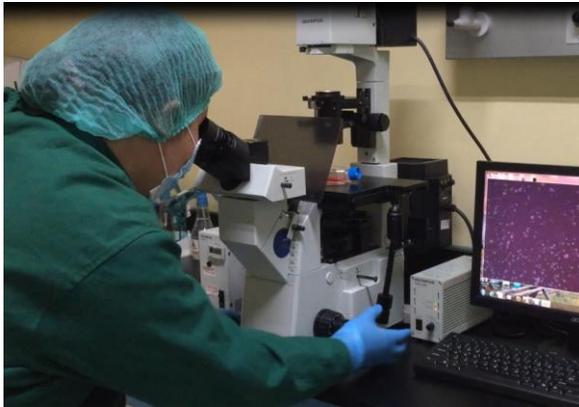
Lung Center of the Philippines

Circulating Tumor Cell Count



**Molecular Diagnostics and Cellular
Therapeutics Laboratory
Department of Pathology**

Circulating Tumor Cell Count (CTC Count)



What are Circulating Tumor Cells?

Circulating tumor cells (CTCs) are rare (i.e. 0.01%) malignant cells that escape from the primary tumor, find their way into the blood vessels and subsequently into circulation.

CTCs act as precursor cells for subsequent growth of additional tumors (metastasis) in distant organs and trigger mechanisms responsible for cancer-related deaths. CTCs were discovered by Dr. Thomas Ashworth in 1869 in the blood of a man with metastatic cancer, and postulated that "cells identical with those of the cancer itself being seen in the blood may tend to throw some light upon the mode of origin of multiple tumors existing in the same person".

CTCs were recently demonstrated to reflect molecular features of cells within tumor masses, a kind of "liquid biopsy". CTCs are identified by their expression of epithelial markers, eg., EpCAM, cytokeratins.

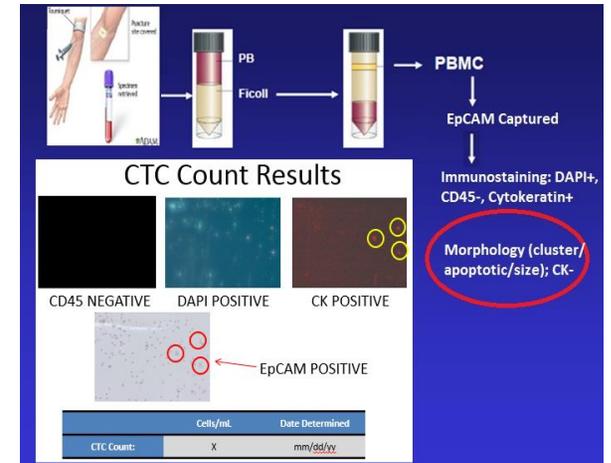
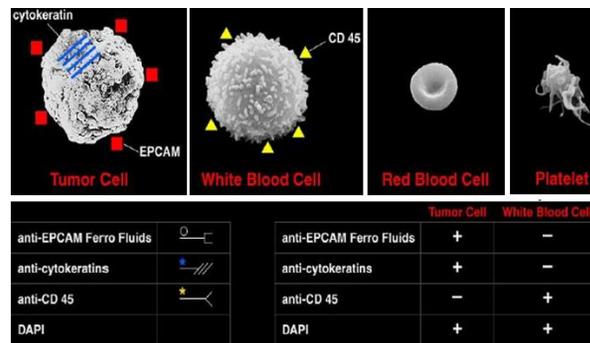
As liquid biopsy, CTC has increasingly been considered for early tumor diagnosis,

therapeutic guidance, and recurrence monitoring due to the abundant information that it can provide about tumors. Additionally, liquid biopsy provides a noninvasive alternative to traditional 'solid biopsy', which cannot be consistently performed in certain situations or in 'real time'. The source of circulating tumor cells is the peripheral blood (PBMC).

What is a Circulating Tumor Cell Count or CTC Count?

Circulating tumor cell count is a simple blood test that helps oncologists in assessing the prognosis of patient's disease status. The CTCs are confirmed cancer cells with an intact, viable nucleus; express cytokeratins, which demonstrate epithelial origin; the absence of CD45 marker, indicating the cell is not of hematopoietic origin; and are often larger cells with irregular shape or subcellular morphology.

Circulating tumor cells (CTCs) captured using magnetic beads are identified through light microscopy and are confirmed by fluorescence microscopy technique using DAPI, cytokeratin and CD45 markers.



What is current prognostic utility of CTC count?

A general trend of increasing CTC count with increasing cancer stage regardless of cancer type was observed. For breast cancer, the correlation was strongest in stages IIA to III. Some cases of zero CTC count for stage IV cancer were noted, suggesting a need for

Cancer type	No. of patients	No. of count per patients			
		Stages			
		I	II	III	IV
Breast	29	2	6	5	0
Gastrointestinal	15	3	1	1	1
Lung	3	1	n/a	n/a	2

