EpCAM+ and EpCAM- circulating tumor cells in metastatic cancer patients: a multicenter study

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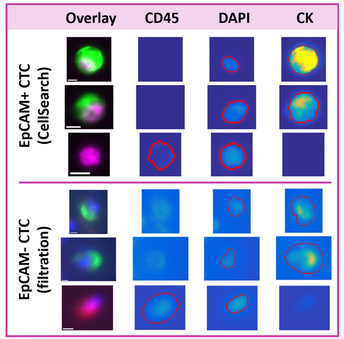
Detection of CTC

CELL LINE RECOVERY

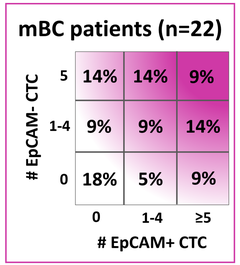
Prostate (PC3) and breast (MDA-MB-231) cancer cell lines were used for spiking in healthy controls at 3 separate occasions and processed at 6 different sites to validate the procedure.

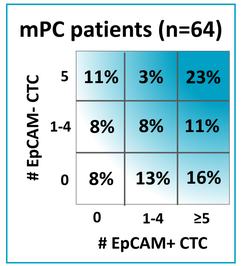
	EpCAM antigens per cell	EpCAM+ CTC recovery	Unaccounted	EpCAM- CTC recovery	Size
PC3	$1.0x10^4$	27%	52%	21%	18 µm
MDA-MB-231	$1.5x10^4$	26%	56%	18%	16 µm



BREAST CANCER PATIENTS

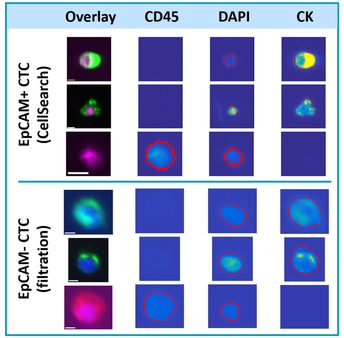
- Mean EpCAM+ CTC: **13** CTC (n=22, min 0-max 208)
- Mean EpCAM- CTC: **8** CTC (n=22, min 0-max 35)
- EpCAM+ CTC ≥5 = **32%**
  EpCAM- CTC ≥5 = **36%**
- Using EpCAM+ and EpCAM- for ≥5 CTC: detection of patients increases to **64%**





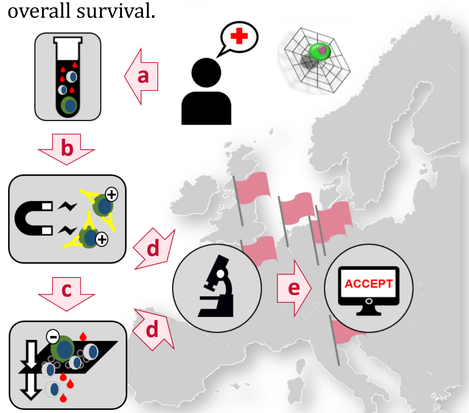
PROSTATE CANCER PATIENTS

- Mean EpCAM+ CTC: **124** CTC (n=106, min 0-max 3300)
- Mean EpCAM- CTC: **3** CTC (n=93, min 0-max 24)
- EpCAM+ CTC ≥5 = **53%**
  EpCAM- CTC ≥5 = **28%**
- Using EpCAM+ and EpCAM- for ≥5 CTC: detection of patients increases to **70%**



CTC-Trap

EpCAM+ CTC are strongly associated with poor prognosis for patients. We investigated the presence of EpCAM- CTC in metastatic prostate cancer (mPC) and metastatic breast cancer (mBC) patients and related their presence with overall survival.



Patients from 6 clinical sites in the European CTC-Trap consortium were enrolled (**a**) in the study for detection of EpCAM+ CTC (by CellSearch) (**b**) and EpCAM- CTC (by filtration) (**c**), followed by quantification (**d**) and review analysis with the program ACCEPT (**e**).

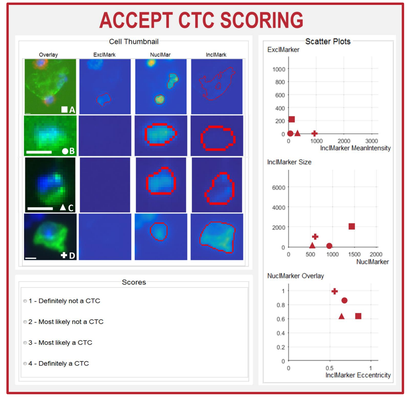
Conclusion

- In a multicenter study EpCAM+ CTC and EpCAM- CTC were detected in mPC and mBC patients.
- EpCAM+ CTC are associated with poor overall survival in mPC, but EpCAM- CTC are not.
- The clinical value of EpCAM- CTC in mPC remains questionable.

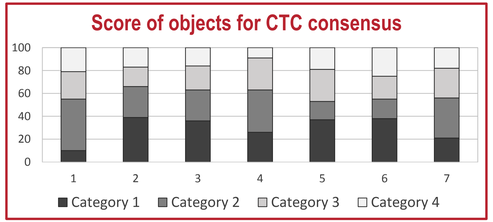
Evaluation of CTC

CTC DEFINITION

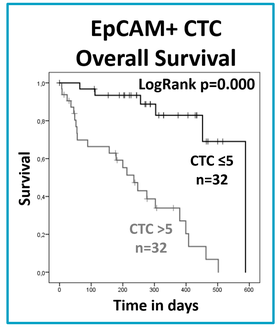
- EpCAM+ CTC: DAPI+, cytokeratin+, CD45-, round, >4µm in size, DAPI-CK overlay >50%
- EpCAM- CTC: DAPI+, cytokeratin+, CD45-, DAPI-CK overlay



A collection of 100 objects were independently reviewed by 7 operators to determine consensus of scoring EpCAM+ and EpCAM- CTC. For 19 of the objects operators were divided whether the object was a CTC or not. For 5 objects all operators were in complete agreement it definitely being a CTC.



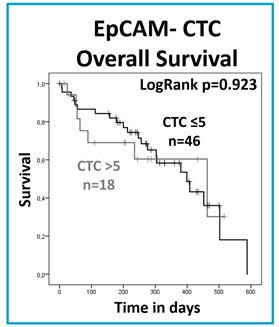
Survival



Clinical outcome was determined for 64 prostate cancer patients.

Presence of EpCAM+ CTC is significantly associated with poor overall survival

Presence of EpCAM- CTC is not associated with poor overall survival



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