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International expert consensus on the clinical integration of circulating tumor cells in solid tumors

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Affiliations & Notes Article Info

Correction:

Errata

Corrigendum to “International expert consensus on the clinical integration of circulating tumor cells in solid tumors” [Eur. J. Cancer 231 (2025) 116050]

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Highlights

- Experts agreed on the clinical utility of CTCs in breast and prostate cancers.
- CTCs remain investigational in other solid tumors with prospective validation needed.
- Clinical utility unproven in early stages, but early BC warrants further exploration.

Abstract

Background

Circulating tumor cells (CTCs) are a versatile biomarker in solid tumors. Extensive research supports their clinical relevance and led to regulatory approval in breast, prostate, and colorectal cancers. However, clinical adoption remains limited mainly due to the lack of consensus and standardized technologies. Additionally, CTC research lacks unified direction. To address these gaps, an international expert panel was established to assess the current and future clinical utility of CTCs.

Methods

A panel of 11 CTC experts identified key areas of controversy, informing a structured survey distributed to 55 international multidisciplinary experts. Consensus was predefined as ≥ 70 % agreement. Areas without consensus were discussed in a virtual meeting, leading to final statements on the clinical integration of CTCs.

Results

Thirty-seven experts completed the survey. Consensus was reached on the clinical utility of CTCs for prognosis and treatment monitoring in metastatic breast (BC) and prostate (PC) cancers, including AR-V7 testing in metastatic castration-resistant PC for therapy selection. In other tumors, CTCs remain investigational. Experts agreed that while clinical utility is not yet established in early-stage disease, CTCs show promise in early BC, especially combined with cell-free DNA (cfDNA) for minimal residual disease detection. CellSearch® is currently the only platform with high-level evidence for clinical use, though emerging technologies are promising. Key challenges include improving detection sensitivity/specificity, standardizing workflows, generating robust data, and clinician education. Experts emphasized shifting from enumeration to phenotypic and molecular characterization, particularly for treatment guidance, and highlighted the complementary role of CTCs and cfDNA, advocating for integrated liquid biopsy approaches.

Conclusions

This consensus offers practical guidance for clinical integration of CTCs and outlines strategic research priorities to unlock their full potential in precision oncology.

Keywords

Circulating tumor cells · Liquid biopsy · Solid tumors · Breast cancer · Prostate cancer · Clinical utility · Biomarker · Consensus statement

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