25.02.2019 – 12:00 Uhr

Sysmex Inostics' OncoBEAM(TM) demonstrates clinical validity and superior performance versus pan-cancer NGS for blood-based mutation detection for hepatocellular carcinoma

Germany (ots) -

Data recently published in Clinical Cancer Research (http://ots.de/0ZGZkf) the advantages of using an ultra-high sensitivity test for detection of mutations which may predict therapeutic efficacy for hepatocellular carcinoma (HCC). Sysmex Inostics' OncoBEAM technology, a highly clinically validated technology for circulating tumor DNA (ctDNA) analysis, was used to determine RAS mutational status across a total of 1,318 patients screened for two phase II studies which evaluated the efficacy of refametinib monotherapy, and refametinib plus sorafenib in patients with RAS-mutant unresectable or metastatic HCC.

Building on evidence from a prior phase II clinical trial which showed that HCC patients whose tumors had a RAS mutation exhibited a robust clinical response in comparison with patients who were wild-type for RAS, investigators planned a prospective cohort to evaluate RAS mutation status at the time of enrollment. Patients were enrolled from 80 study centers in 21 countries across Asia, Europe, and the USA. A primary challenge of enrollment across the world is that patients with advanced or metastatic HCC do not typically undergo tissue biopsy due considerable risk of complications; therefore, molecular testing is not routinely performed in this cancer. Further confounding enrollment is the low prevalence of RAS mutations in patients with HCC, estimated to be 5%. To overcome these challenges, investigators utilized OncoBEAM to screen patient plasma for RAS mutations, as plasma testing can overcome the need for a tumor biopsy procedure and deliver tumor mutational status via a blood draw. Similar to other previously published studies across various cancer types, OncoBEAM testing enabled investigators to obtain information they would not otherwise receive in order to inform eligibility for inclusion in these HCC studies.

Not only was OncoBEAM able to successfully detect RAS mutations across this patient population at a rate consistent with the expected RAS mutation rate for HCC via a simple, minimally-invasive blood draw, but for a subset of patients who were also tested using a broad, next-generation sequencing (NGS)-based method, OncoBEAM demonstrated superior detection for low frequency RAS mutations. Out of 27 patients determined to be RAS-positive by OncoBEAM who were also tested using NGS, RAS mutation status was only confirmed in 12 patients (44.4%). The limited detection with NGS was most likely due to the order of magnitude difference in the limit of detection between the two assays (0.1% for NGS versus 0.02% for OncoBEAM). In fact, the overall RAS mutation rate of the HCC patients screened with OncoBEAM in these trials was 4.4%, which matched very closely with previous reports in this population (5%).

Screening across a greater breadth of genomic targets via NGS can sometimes reveal additional biomarker information which may inform future research. For these two HCC phase II studies, NGS testing revealed that outside of KRAS and NRAS the most frequently mutated region was the TERT promoter, followed by TP53 and CTNNB1. However, actionable mutations in genes other than RAS were rare, occurring in less than 10% of the patients tested with NGS. These HCC clinical studies highlight the utility of focused testing with an assay like OncoBEAM: ultra-high sensitivity detection of rare mutant molecules may provide benefits for patient welfare, and can ensure the most time and cost-effective approach to screening and enrollment for biomarker-driven trials when the biomarker relationship to disease and therapeutic strategy has been established.

Publication Details

Lim H S et al. Phase II Studies with Refametinib or Refametinib plus Sorafenib in Patients with RAS-Mutated Hepatocellular Carcinoma. Clin Cancer Res 24:4650-4661 (2018).

About Sysmex Inostics

Sysmex Inostics, a subsidiary of Sysmex Corporation, is a molecular diagnostic company that is a pioneer in blood-based cell-free tumor DNA mutation detection in oncology utilizing highly sensitive technologies such as OncoBEAM(TM) and SafeSEQ. These technologies were initially developed by experts at the Johns Hopkins School of Medicine over a decade ago and this deep expertise in ctDNA anaylsis extends to the core of Sysmex Inostics' core capabilities for technology development and implementation.

With more than 10 years of experience in liquid biopsy Sysmex Inostics is a trusted partner to leading pharmaceutical companies, advancing their efforts to bring the most effective personalized cancer therapies to global markets.

Sysmex Inostics' OncoBEAM(TM) and SafeSEQ services are readily available to support clinical trials and research in oncology. In addition, OncoBEAM(TM) tests are available through a CLIA certified laboratory for routine clinical analysis as well as distributed as kit products in EU.

Sysmex Inostics' headquarters and GCP Service Laboratory are located in Hamburg Germany; Sysmex Inostics' CLIA-certified and GCP Clinical Laboratory is located in Baltimore, Maryland. For more information refer to www.sysmex-inostics.com or email

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