Application of liquid biopsy in pancreatic cancer for precision medicine

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Lecture : Pancreatic adenocarcinoma (PDAC) is the most common malignancy in the pancreas. The rapid development of high-throughput sequencing has allowed characterization of tumor related mutations, including detection of mutation in liquid biopsy. The clinical application of ctDNA in pancreatic cancer including diagnosis and molecular profiling of tumor; tracking of therapeutic response; monitoring of resistance and tumor heterogeneity; detection of postsurgical residual disease and early cancer detection. Generally, ctDNA blood levels are higher in patients with larger tumors as well as higher than normal control. Theoretically, in case of chemotherapy response, therapy-induced tumor cell death will lead to an increase in ctDNA levels. In practice ctDNA levels will then eventually become undetectable as eliminated cancer cells are no longer shedding their DNA; while in the long term, increasing ctDNA levels could indicate disease progression as a result of increasing tumor load. ctDNA analysis is a promising method for anti-cancer treatment monitoring, although the application in clinical practice is hindered by the lack of established reference values for ctDNA detection levels and fluctuations and the lack of measurement technique standardization.