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Editorial:

ADVANCES IN BIOMARKERS FOR CANCER DIAGNOSIS.

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Cancer is one of the leading causes of morbidity and mortality worldwide, with approximately 14 million new cases, according to the latest WHO data for 2012^{1,2}. It is estimated that the number of cases will continue to increase in the next two decades to 22 million new cases per year ¹.

Nowadays, the genetic characterization of a tumor is by invasive techniques, from surgical samples or biopsies. The technological advances have led to the development of liquid biopsies that allow the detection of cancer, and the use of more effective and individualized treatments. The liquid biopsy has advantages over solid tumor biopsy, is non-invasive, more sensitive and accurate, and could provide more information on the prognosis and types of treatment^{3,4}.

The liquid biopsy uses biomarkers, such as circulating tumor cells, ctDNA (circulating tumor DNA) and exosomes, present in blood that facilitate the early detection of cancer, also offers the identification of genetic and epigenetic mutations⁵⁻⁶. Furthermore, it may reflect the genetic profile of tumor subclones present in a patient⁷.

The development of new technologies, dPCR, NGS (next-generation sequencing), more sensitive and accurate, have allowed to improve the detection and reduce the time of detection of these biomarkers to its use in clinical applications. However, liquid biopsy shows some limitations, no consensus in the methods of detection, and

is necessary more studies for its routine application in clinic.

The exosomes are small vesicles with a diameter of 30 to 100 nm, obtained from liquid biopsy and are promising biomarkers because provide information on tumor cells⁸. Their detection and quantification, due to their specificity and stability in different biological fluids, make them ideal candidates as biomarkers of diagnosis and progression of cancer.

Exosomes are present in almost all biological fluids, and contain molecules (proteins, mRNAs, DNA fragments and miRNA) present in the original cancer cells⁹. They are secreted from tumor cells and can participate in the growth and metastasis of tumors, in addition to generating chemo-resistance.

In an article of this issue, the authors review the role of the exosomes as potential cancer biomarkers for early detection, diagnosis and prognosis.

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