MULTI-CANCER BLOOD TEST CAN DETECT 26 CANCERS

In the first study of its kind, researchers have used a simple blood test to safely detect multiple cancers in nearly 10,000 women with undiagnosed cancer. In some cases, women who took the blood test were able to have treatment to potentially cure the cancer.

The researchers at the Johns Hopkins Kimmel Cancer Center in Baltimore, Maryland, say the study is the first to use this type of blood test to screen people with no evidence or history of cancer. They were able to use the test to diagnose the disease and to guide treatment.

The type of blood test is a liquid biopsy; a non-invasive blood test that can identify and diagnose certain forms of cancer. The test works by detecting the presence of cancer gene mutations in degraded fragments of DNA that tumours release into the bloodstream (called circulating free DNA or cfDNA) and the levels of specific cancer proteins in the blood to diagnose as many as 26 cancers.

In the study, 17 of the 26 cancers (65%) detected by the blood test were diagnosed at an early stage, before the tumour had spread. Of the 26 patients whose cancers were first detected by the blood test, 12 remain in remission and eight remain in treatment or have stable disease approximately nine months after diagnosis.

Having used the blood test to diagnose 26 different cancers, the researchers used a diagnostic scan called a PET-CT scan to confirm the diagnoses. The blood test followed by PET-CT scanning diagnosed the 26 cancers – including lymphomas, thyroid cancers, lung, kidney, colorectal, breast and ovarian cancers – with more than 99% specificity. This means the test correctly diagnosed people who were positive for these cancers more than 99 in every 100 times. The researchers also confirmed that the genetic mutations of cfDNA the blood test detected that led to a positive test were present in the cancer 100% of the time.

“The study incorporated PET-CT imaging to provide independent confirmation of the existence of a cancer and to precisely localise its site,” says senior author Dr Nickolas Papadopoulos. “For example, we could detect a lung cancer, tell in which lobe of which lung the cancer was located, the size of the cancer and if there were metastatic lesions present. Blood tests alone are not able to provide this type of precise information.”

The researchers also used the test alongside the conventional screening methods for detecting breast, colon and lung tumours. The team says that combining existing cancer screening methods with the blood test improved the sensitivity with which these three cancers were diagnosed from 47% to 71%.

“This study suggests that a multi-cancer blood test can be complementary and additive to standard of care screening and may be a good strategy for increasing early detection of cancer,” says Professor Anne Marie Lennon, lead author of the study.

However, the blood test had a much lower sensitivity (31%) for seven other cancer types (lymphoma, appendix, uterine, thyroid, kidney, ovary and cancers arising from an unknown primary site). “This underscores the value of blood-based multi-cancer screening as both complementary and additive to standard of care screening,” Dr Papadopoulos explains.

The investigators plan to continue to follow all 9,911 participants for five years, as it is likely that other cancers that were too small to be detected by imaging or were not detected by the blood test will arise in these individuals. The test remains a research tool and is not currently available to the general public. The study was presented at the virtual American Association for Cancer Research conference.