New gene discovery linked to heightened risk of bowel cancer recurrence and shorter survival

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Scientists have discovered a new gene linked to an increased risk of bowel cancer recurrence and shortened survival, reveals research in the journal *Gut*.

The discovery offers the potential to signal likely disease course in those patients who carry the gene and paves the way for the development of personalised treatments to target it, they suggest.

Bowel cancer is the second most commonly diagnosed cancer in the world, and after lung cancer, the most common cause of cancer death in Europe and the US. But despite advances in treatment, the return of cancer in another part of the body after curative surgery remains the primary cause of death.

Ribonucleic acid (RNA) is one of the building blocks of life that carries genetic information, and recent evidence suggests that a derivative of RNA called small nucleolar RNA, or snoRNA for short, is involved in cell regulation and the development of certain types of cancer.

In a bid to find out if snoRNAs signal the likelihood of disease recurrence and associated survival, the research team assessed the expression of four different snoRNAs in 274 tissue samples, taken from three separate sets of bowel cancer patients, and six different types of bowel cancer cells cultured in the laboratory.

The tissue samples from the bowel cancer patients included 250 taken from the tumour itself and 24 taken from normal healthy cells lining the gut.

Analysis showed that levels of all four snoRNAs were significantly higher in cancerous than in normal cells, and clearly differentiated between them.

Furthermore, higher levels of snoRNA42 were associated with overall, and disease-free, survival, and emerged as a risk factor for the return of cancer in another part of the body (distant metastasis).

In a further smaller sample of bowel cancer patients, classified as being in the early stages of their disease (stage II), snoRNA42 identified those at high risk of recurrence and shorter survival.

Additional experimental tests showed that high levels of snoRNA42 in cancer cells grown in the laboratory boosted uncontrolled cell division, spread to other areas, invasion of healthy tissue, increased resistance to programmed cell death (anoiki) and tumour growth.

The researchers say that snoRNA42 seems to be a new type of cancer-promoting gene that has promising potential as a reliable biological indicator for bowel cancer patients in whom the disease is likely to return.

"Taken together, these results underscore the potential of snoRNA42 expression as a useful biomarker for selecting high risk patients that may receive more personalised treatments in future," they write.

"The investigation of snoRNAs as potential biomarkers and drivers of disease progression represents an unexplored area of cancer biology and has enormous potential clinical significance," they conclude, adding that

future research may uncover even more important snoRNAs.

More information: Clinical significance of snoRNA42 as an oncogene and a prognostic biomarker in colorectal cancer, DOI: 10.1136/gutjnl-2015-309359

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