Most types of cancer can be put down to bad luck rather than risk factors such as smoking, a study has suggested.

A US team were trying to explain why some tissues were millions of times more vulnerable to cancer than others.

The results, in the journal Science, showed two thirds of the cancer types analysed were caused just by chance mutations rather than lifestyle.

Cancer Research UK said a healthy lifestyle would still heavily stack the odds in a person's favour.

In the US, 6.9% of people develop lung cancer, 0.6% brain cancer and 0.00072% get tumours in their laryngeal (voice box) cartilage at some point in their lifetime.

Toxins from cigarette smoke could explain why lung cancer is more common.

But the digestive system is exposed to more environmental toxins than the brain, yet brain tumours are three times as common as those in the small intestine.

Root of cancer
The team at Johns Hopkins University School of Medicine and Bloomberg School of Public Health believe the way tissues regenerate is the answer.

Old tired cells in the body are constantly being replaced with new ones made by dividing stem cells.
But with each division comes the risk of a dangerous mutation that moves the stem cell one step closer to being cancerous.

The pace of turnover varies throughout the body with rapid turnover in the lining of the gut and a slower pace in the brain.

The researchers compared how often stem cells divided in 31 tissues in the body over a lifetime with the odds of a cancer in those tissues.

They concluded that two thirds of cancer types were "due to bad luck" from dividing stem cells picking up mutations that could not be prevented.

These cancer types included Glioblastoma (brain cancers), small intestine cancers and pancreatic cancers.

Cristian Tomasetti, an assistant professor of oncology and one of the researchers, said a focus on prevention would not prevent such cancers.

"If two thirds of cancer incidence across tissues is explained by random DNA mutations that occur when stem cells divide, then changing our lifestyle and habits will be a huge help in preventing certain cancers, but this may not be as effective for a variety of others.

"We should focus more resources on finding ways to detect such cancers at early, curable stages."

Poor lifestyle
The remaining third of cancer types, which are affected by lifestyle factors or a heightened family risk, include some of the most common:

- Basal cell carcinoma - a type of skin cancer made more common by too much UV exposure
- Lung cancer - strongly linked to smoking
- Colon cancer - increased by poor diet and family risk genes

Separate research by Cancer Research UK shows more than four in 10 of the total number of cancers were down to lifestyle.

Dr Emma Smith, senior science information officer at the charity, told the BBC: "We estimate that more than four in 10 cancers could be prevented by lifestyle changes, like not smoking, keeping a healthy weight, eating a healthy diet and cutting back on alcohol.

"Making these changes is not a guarantee against cancer, but it stacks the odds in our favour.

"It's vital that we continue making progress to detect cancer earlier and improve treatments, but helping people understand how they can reduce their risk of developing cancer in the first place remains crucial in tackling cancer."