

The rapid progression of esophageal cancer

Richard Béliveau

Translated from Le Journal de Montréal, September 19th, 2022

An American study reports that between 2012 and 2019, the incidence of esophageal cancer doubled among 45-64 year olds.

This silent evolution contributes to the high mortality rate associated with esophageal cancer, with only 15% of patients still alive 5 years after diagnosis.

GROWING CANCER

Although quite rare, the incidence of esophageal cancer has nevertheless increased enormously over the past 40 years and this disease is now considered to be one of the fastest growing cancers (1).

A recent study illustrates this sharp increase in incidence: analysis of electronic medical records of 5 million people living in Florida revealed that among people aged 45 to 64, the diagnosis of esophageal cancer practically doubled in less than ten years (2012-2019), going from 49 to 94 cases per 100,000 people (2).

This increase is not related to an increase in screening, as endoscopy rates have not changed during this period, and therefore reflects a real and extremely rapid acceleration in the number of people affected by this disease in recent years.

THE RISKS OF OBESITY

What can explain such a rapid and significant increase? First of all, it must be said that the cells that line the esophagus seem particularly susceptible to developing cancer: recent studies have shown that these cells spontaneously accumulate a large number of mutations, so much so that by the age of 50, more than half of the wall of the esophagus is made up of mutated clones, containing several thousand mutations in pro-cancer genes (3).

It is therefore likely that the recent increase in esophageal cancers is due to one or more factors that promote the progression of these mutant cells to more advanced forms of cancer.

One of these factors is certainly the sharp increase in the number of overweight people that has occurred in recent decades.

Obesity is often associated with chronic gastroesophageal reflux which promotes the development of endobrachyoesophagus (Barrett's esophagus), a condition that is associated with a very large (30 to 60 times) increase in the risk of adenocarcinoma of the esophagus. Repeated exposure of cells present at the stomach-oesophageal junction to gastric acid causes replacement (metaplasia) of normal oesophageal tissue with intestinal-like mucosa, which may subsequently develop into adenocarcinoma.



These observations show once again how much our lifestyle can influence the development of cancer. Despite its high burden of mutations, esophageal cancer remains a rare disease, which means that our natural anti-cancer defenses normally manage to neutralize its progression. The metabolic and physiological upheavals caused by excess fat weaken these defenses and provide precancerous cells with a more permissive environment, which can promote their evolution into mature cancer.

- (1) Brown LM et al. Incidence of adenocarcinoma of the esophagus among white Americans by sex, stage, and age. *J. Natl Cancer Inst.* 2008; 100: 1184-7.
- (2) Qumseya BJ et al. Alarming increase in prevalence of esophageal cancer and Barrett's esophagus in middle-aged patients: Findings from a statewide database of over five million patients. *DDW 2022; Abstract 671.*
- (3) Martincorena I et al. Somatic mutant clones colonize the human esophagus with age. *Science* 2018; 362: 911-917.