

Research shows for the first time that protein complexes 'inflammasomes' are linked to obesity-related colon cancer

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New research presented at this year's European Congress on Obesity (held online, 10-13 May) finds evidence that structures called

inflammasomes (a part of the innate immune system that helps to regulate inflammation) could play an important role in the development of obesity-associated colon cancer. The study is by Dr. Victoria Catalán and Professor Gema Frühbeck, University Hospital Navarra and CIBEROBN, Instituto de Salud Carlos III, Pamplona, Spain, and colleagues.

Inflammasomes form part of the innate immune system which provides the first line of defence against pathogens using a wide range of physical, chemical, and biological responses.

Dysregulation of inflammasomes within visceral adipose tissue (VAT—fat that surrounds the organs) and in the [colon](#) can trigger prolonged episodes of inflammation, favouring the development of [colon cancer](#) (CC). The aim of this study was to explore whether obesity and CC influence the expression of different inflammasomes and their main 'trigger' molecules (called interleukins 1 β and 18), in VAT and in the colon, where they could create a microenvironment favourable for tumour growth.

Tissue samples were obtained from 99 subjects [38 lean (LN), and 61 obese (OB)], who were further classified into those with CC (41), and those without (58). The study revealed for the first time that obesity and CC increase gene expression levels of the proteins NLRP3, NLRP6, ASC, IL1B and NOD2 in VAT.

Gene expression levels of adiponectin were also reduced in VAT in obese subjects as well as those with CC. This may increase the risk of developing conditions such as type 2 diabetes and [metabolic syndrome](#) due to adiponectin's role in modulating metabolic processes and improving insulin sensitivity. Conversely, CC was associated with reduced expression of NLRP6 and IL18 in [tissue samples](#) taken from the colon.

The team also found evidence of a possible role for inflammasomes in altering the expression levels of proteins involved in maintaining the integrity of the intestinal wall.

The authors conclude: "These findings provide evidence about the potential involvement of inflammasomes in obesity-associated colon cancer by regulating inflammation and the intestinal-barrier integrity."

They add: "Therefore, strategies to restore the functions of immunosurveillance of [inflammasome](#) components could represent an interesting target to identify and treat patients with obesity at increased risk for developing colon cancer."

More information: This article is based on late breaking abstract 0400 at the European on Obesity (ECO2021).

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