Administration of aspirin and risk of pancreatic ductal adenocarcinoma

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A recent study by Sanat et al. (2023) investigated Aspirin's potential protective effects against Pancreatic Ductal Adenocarcinoma (PDAC), leveraging its antioxidant and anti-inflammatory properties.[1] This case-control study included 470 PDAC patients and 526 matched controls from Shariati Hospital in Tehran. PDAC, originating in the pancreatic duct cells, is known for its severe prognosis due to limited treatment options and late-stage diagnosis. It accounts for about 90% of pancreatic cancer cases and is characterized by rapid progression and early metastasis.[2] Risk factors include tobacco use, obesity, chronic pancreatitis, and genetic mutations.[1] A GLOBOCAN 2020 survey reported 495,773 new PDAC cases and identified it as the seventh leading cause of cancer-related deaths, with 466,003 fatalities annually.[3]

Aspirin, a member of the Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) family, inhibits cyclooxygenase (COX) enzymes and is known for its anti-inflammatory effects. Pancreatic lesions often exhibit high COX-2 levels, making aspirin a candidate for PDAC prevention. However, Sanat et al.'s study found no significant protective effect of low-dose aspirin (80mg). The study's adjusted odds ratios for aspirin users were close to 1 (1.01), with no significant difference across durations of use (1, 5, or 10 years), all with p-values > 0.05.[1] This thorough investigation used accurate diagnostic procedures, including bio-sample collection and fine-needle aspiration for suspected cases. The control group had gastrointestinal disorders but no other cancers or pancreatic abnormalities. Notably, increased PDAC rates were observed in rural patients and those with a history of smoking or opium use. The study employed a valid questionnaire and statistical analyses, highlighting the careful approach taken.[1]

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While Aspirin shows major benefits in other contexts, its role in PDAC risk reduction appears limited. Recent research highlights aspirin's potential risks, such as increased bleeding in anticoagulated patients, particularly those undergoing invasive surgeries. A meta-analysis emphasized that low-dose aspirin's cardiovascular benefits are counterbalanced by serious bleeding risks, including major, intracranial, and gastrointestinal bleeding.[4] Therefore, clinicians must weigh these risks, especially for PDAC patients with additional conditions like cardiovascular disease. Further studies are needed to explore the impact of different aspirin doses and interactions with other drugs, such as atorvastatin, which may affect its efficacy in cancer prevention.[5] Additionally, high-risk populations exposed to carcinogens should be studied to assess aspirin's potential in preventing PDAC. Overall, while aspirin has known benefits, its use for reducing PDAC risk is not supported by current evidence and requires further investigation.

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