Pathogenic gut bacteria promote cognitive impairment with age

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Video Byte

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Abstract

Alzheimer's disease (AD) is the most common cause of dementia in elderly individuals. Many factors affect age-related neurodegenerative disorders like AD, but one contributor is something you may not expect. Gut microbes – beneficial and pathogenic microbes in the GI tract – have far-reaching effects, including modulating the immune responses of hosts. Microbial populations change with age, and the decline of beneficial bacteria has been linked to increased inflammation. In one study, researchers found that transferring gut microbes from elderly individuals to mice through fecal transplantation caused cognitive impairment. Researchers isolated specific bacterial strains - *Paenibacillus hominis* and *Escherichia coli* – that are increased in the feces of elderly humans and mice. Transplanting these bacteria into younger pathogen-free mice caused cognitive impairment and colitis. Bacteria seemed to exert their effects by deploying extracellular vesicles toward the brain. While proinflammatory lipopolysaccharide from their cell walls was directly absorbed into the bloodstream. These results suggest that an increase in pathogenic gut bacteria may drive inflammation in both the GI tract and the brain. Promoting cognitive impairment as these bacteria become more abundant with age.