Long-term risk of cardiovascular and cerebrovascular disease after removal of the colonic microbiota by colectomy: a cohort study based on the Danish National Patient Register from 1996 to 2014 - DTU Orbit (18/12/2018)

The hypothesis of the study was that if the gut microbiota is involved in the development of atherosclerotic cardiovascular and cerebrovascular diseases (CVDs), total colectomy may reduce the long-term risk of CVDs. The aim was therefore to investigate the risk of CVD in patients after a total colectomy compared with patients undergoing other types of surgery, which are not expected to alter the gut microbiota or the CVD risk. The Danish National Patient Register including all hospital discharges in Denmark from 1996 to 2014. Patients (n=1530) aged 45 years and above and surviving 1000 days after total colectomy without CVDs were selected and matched with five control patients who were also free of CVD 1000 days after other types of surgery. The five control patients were randomly selected from each of the three surgical groups: orthopaedic surgery, surgery in the gastrointestinal tract leaving it intact and other surgeries not related to the gastrointestinal tract or CVD (n=22 950). The primary outcome was the first occurring CVD event in any of the seven diagnostic domains (hypertensive disorders, acute ischaemic heart diseases, chronic ischaemic heart disease, cardiac arrhythmias, heart failure, cerebrovascular diseases and other arterial diseases) and the secondary outcomes were the first occurring event within each of these domains. Estimated by Cox proportional hazard models, the HRs of the composite CVD end point for patients with colectomy compared with the control patients were not significantly reduced (HR=0.94, 95% confidence limits 0.85 to 1.04). Among the seven CVD domains, only the risk of hypertensive disorders was significantly reduced (HR=0.85, 0.73 to 0.98). Colectomy did not reduce the general risk of CVD, but reduced the risk of hypertensive disorders, most likely due to salt and water depletion induced by colectomy. These results encourage a reappraisal of the associations between gut microbiota and CVD.

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