IMPORTANCE OF METABOLIC SYNDROME IN COLORECTAL NEOPLASIA OUTCOMES: SYSTEMATIC REVIEW AND META-ANALYSIS

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Introduction Metabolic syndrome (MetS) is a cluster of factors including hyperglycaemia, hypertension, obesity, hyperlipidaemia and hypercholesterolaemia. It has been suggested that MetS increases the risk of colorectal neoplasia and colorectal cancer (CRC) mortality among general population. This systematic review aimed to examine the association of MetS with 1) recurrent colorectal adenoma or occurrent CRC after adenoma resection 2) CRC-related post-surgical complications 3) CRC survival including overall survival (OS), cancer-specific survival (CSS) and progression-free survival (PFS).

Methods The review was conducted according to PRISMA guidelines. MEDLINE, Embase, Scopus and Web of Science were searched up to 22.11.2019. Eligible studies with extractable hazard ratios (HR) or odds ratios (OR) were included in meta-analyses (where ≥ 3 studies were available on a specific outcome) using random effects models. I² test was used to assess between-study heterogeneity. Quality appraisal was undertaken with Newcastle-Ottawa score.

Results 1108 non-duplicate articles were identified with 61 selected for full text assessment: 20 were eligible and included. These articles used different definitions of MetS: 8 AHA or NCEP ATP III or IDF, 5 modified AHA or ATP III, 5 Chinese Diabetes Society, 2 three of four MetS components. Two articles reported an insignificant association between MetS and recurrent adenoma. Two articles combined adenoma and CRC as an overall outcome and found an association with MetS (HR=1.33 or 1.42). One article reported a significant association between MetS and recurrent nonadvanced adenoma (OR=1.52) only in women and null associations with neoplasia (which included adenoma and CRC) in both sexes. Five articles reported post-surgical complications in CRC patients: 4 assessed CRC-related post-surgical complications (pooled OR=2.76, 95%CI 0.94–8.15) and 1 combined CRC-related and other post-surgical complications. Ten articles assessed the survival in CRC patients. MetS was statistically significantly associated with CSS (pooled HR=1.80, 95%CI 1.04–3.12) but was not with OS (1.04, 0.94–1.15) or PFS (1.12, 0.89–1.42). Between-study heterogeneity was insignificantly modest in OS studies.

Conclusions Our findings suggest that MetS is associated with worse CSS but not with OS, PFS or cancer-related post-surgical complications in CRC patients. Studies on recurrent adenoma or occurrent CRC post adenoma resection are limited. Varying definitions of MetS made comparison of studies difficult and a standardised definition should be developed. Well-designed research is required to better understand the association of outcomes between MetS and colorectal neoplasia.