Meta-analysis of the predictive value of C-reactive protein for infectious complications in abdominal surgery

Michel Adamina, Thomas Steffen, Ignazio Tarantino, Ulrich Beutner, B M Schmied & Rene Warschkow

BACKGROUND
The aim of this analysis was to assess the predictive value of C-reactive protein (CRP) for the early detection of postoperative infectious complications after a variety of abdominal operations.

METHODS
A meta-analysis of seven cohort studies from a single institution was performed. Laparoscopic gastric bypass and colectomies, as well as open resections of cancer of the colon, rectum, pancreas, stomach and oesophagus, were included. The predictive value of CRP was assessed by the area under the curve (AUC) of the receiver operating characteristic (ROC) curve.

RESULTS
Of 1986 patients, 577 (29·1 (95 per cent c.i. 27·1 to 31·3) per cent) had at least one postoperative infectious complication. Patients undergoing laparoscopic gastric bypass (383 patients) or colectomy (285), and those having open gastric (97) or colorectal (934) resections were combined in a meta-analysis. Patients who had resection for cancer of the oesophagus (41) or pancreas (246) were analysed separately owing to heterogeneity. CRP levels 4 days after surgery had the highest diagnostic accuracy (AUC 0·76, 95 per cent c.i. 0·73 to 0·78). Sensitivity and specificity were 68·5 (60·6 to 75·5) and 71·6 (66·6 to 76·0) per cent respectively. Positive and negative predictive values were 50·4 (46·0 to 54·8) and 84·3 (80·8 to 87·3) per cent. The threshold CRP varied according to the procedure performed.

CONCLUSION
The negative predictive value of serum CRP concentration on day 4 after surgery facilitates reliable exclusion of postoperative infectious complications.