



**Mr Falk Peter**

**Dept of Surgery Sahlgrenska Universitetssjukhuset/Östra 416 85Göteborg Sweden (+46)-31-343 49 70 (+46)-31-343 61 69 peter.falk@surgery.gu.se**

**Topic :** Mesothelial repair

**Authors and addresses :** Peter Falk (1), Maria Bergström PhD MD (1), Ingrid Palmgren (1), Lena Holmdahl PhD MD (1), Michael E. Breimer PhD MD (1) and Marie-Louise Ivarsson PhD MD (2)

(1) Department of Surgery, Sahlgrenska academy at Göteborg University, Sahlgrenska University Hospital, Göteborg, Sweden

(2) Department of Surgery, Kungälv Hospital, Kungälv, Sweden

**Presenting Authors :** Peter Falk

Studies of TGF- $\beta$ 1-3 in serosal fluid during abdominal surgery and their effect on in vitro human mesothelial cell proliferation

Increased transforming growth factor-beta (TGF- $\beta$ ) levels are associated with fibrosis, affected cell proliferation and post-surgical adhesion development, but the knowledge regarding TGF- $\beta$  response to the surgical trauma is limited. This study investigated TGF- $\beta$ 1-3 isoforms and fibrinolytic factors in peritoneal serosal fluid during abdominal surgery, together with the in vitro effect of TGF- $\beta$ 1-3 on human mesothelial cell proliferation.

Total as well as biological active TGF- $\beta$ 1-3 and fibrinolytic factors: t-PA, uPA and PAI-1 were measured in serosal fluid and plasma from 23 patients undergoing colorectal cancer surgery. In vitro proliferation of human primary mesothelial cell cultures upon TGF- $\beta$ 1-3 stimulation was also investigated.

Total TGF- $\beta$ 1 and TGF- $\beta$ 2 levels were similar in serosal fluid and plasma while active fractions were increased in serosal fluid. In contrast, total fraction of TGF- $\beta$ 3 was higher in serosal fluid compared with plasma, while levels of active fractions did not differ. Plasminogen activators (t-PA, uPA) were elevated while the inhibitor (PAI-1) was decreased, in serosal fluid compared to plasma. The in vitro mesothelial cell proliferation studies revealed that high TGF- $\beta$ 1-3 concentrations decreased cell proliferation, while lower concentrations of TGF- $\beta$ 1, similar to the levels found during surgery, increased mesothelial cell proliferation.

This human study shows increased active TGF- $\beta$  levels in peritoneal serosal fluid, compared to plasma, during abdominal surgery and that TGF- $\beta$ 1 at physiological concentrations, increased human mesothelial cell proliferation in vitro. TGF- $\beta$  cytokines may be involved in post-surgical adhesion formation.