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## **Increased levels of interleukin-10 and transforming growth factor-beta in the plasma and ascitic fluid of patients with advanced ovarian cancer.**

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### **Abstract**

**OBJECTIVES:** To assess expression of the immunosuppressive cytokines IL-10 and TGF-beta in the ascitic fluid and plasma of advanced ovarian cancer patients.

**DESIGN:** A prospective study.

**SETTING:** The Department of Obstetrics and Gynaecology at the University of Arkansas for Medical Sciences.

**POPULATION:** Twenty-eight women diagnosed with advanced ovarian cancer and ten normal female controls.

**METHODS:** Plasma and ascitic samples were collected at the time of surgery and analysed for the presence of IL-10 and TGF-beta using a sensitive enzyme-linked immunosorbent assay.

**RESULTS:** Elevated levels of IL-10 were detected in the plasma [mean (SD) = 12 (5) pg/mL; range 8 to 23 pg/mL] and in the peritoneal fluid [mean (SD) = 165 (137) pg/mL; range 50 to 556 pg/mL] of ovarian cancer patients, while no detectable IL-10 was found in any of the normal control plasma samples tested. Similarly, plasma levels of TGF-beta in ovarian cancer patients were significantly higher [mean (SD) = 1,506 (246) pg/mL; range 1,020 to 2,070 pg/mL] compared with controls [mean (SD) = 937 (187) pg/mL; range 770 to 1,140 pg/mL] ( $P < 0.001$ ). Surprisingly, however, although elevated TGF-beta levels were also detected in the peritoneal fluid of all ovarian cancer patients [mean (SD) = 407 (158) pg/mL; range 140 to 770 pg/mL], these levels

were significantly lower than those seen in matched plasma samples ( $P < 0.001$ ).

**CONCLUSIONS:** Local and systemic secretion of immunosuppressive cytokines may play an important role in the impaired anti-tumour immune function commonly observed in advanced ovarian cancer. However, the observation that plasma levels of TGF-beta are significantly higher than those detected in the ascitic fluid raises the possibility that cells other than tumour cells are responsible for TGF-beta release in the bloodstream of these patients.

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**MeSH Terms, Substances**

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