Effect of hysterosalpingography on serum cancer antigen (CA-125) levels

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Summary

Objective: The aim of our study was to detect any rise in serum levels of CA-125 after hysterosalpingography (HSG) as a result of irritation of the peritoneum.

Study design: Serum levels of CA-125 were assessed before HSG and at the 2nd and 6th hours after HSG in 32 infertile patients who were admitted to our clinic from April 2002 to September 2002. Patients who showed tubal occlusion or Asherman Syndrome were excluded from the study. The levels of serum CA-125 were compared statistically. Statistical analysis was performed with SPSS 10.0 statistical software and the paired-sample t-test was applied.

Results: The mean levels of serum CA-125 before HSG, and at the 2nd and 6th hours after HSG were; 14.11 ± 5.97 mIU/ml, 13.96 ± 5.80 mIU/ml, and 14.06 ± 5.80 mIU/ml, respectively. There was no statistically significant difference between serum levels of CA-125 before HSG and at the 2nd or 6th hours after HSG, and also between the 2nd and 6th hours after HSG ($p > 0.05$).

Conclusion: We have not found any reports up to date about the levels of serum CA-125 after HSG. In our study we did not detect any increase in levels of serum CA-125 at the 2nd and 6th hours after HSG in spite of peritoneal irritation. We propose that this finding is because leakage of radioopaque material to the abdominal cavity is minimal during the HSG procedure.

Key words: CA-125; Hysterosalpingography; Peritoneal irritation.

Introduction

Cancer antigen-125 (CA-125) is a glycoprotein with high molecular weight that is secreted from cell surfaces derived from embryonic coelomic epithelium. Serum CA-125 is widely used as a serum tumor marker for the diagnosis and follow-up of serous epithelial cancer of the ovary. However, increases in the levels of serum CA-125 have been shown in many non-malignant conditions related to the intraabdominal cavity such as endometriosis, pelvic inflammatory disease, liver cirrhosis, pregnancy and uterine fibroids. It is suggested that this may be due to peritoneal irritation [1].

The aim of our study was to detect any rise in serum levels of CA-125 after hysterosalpingography (HSG), as a result of irritation of the peritoneum.

Materials and Methods

Our study was done with 32 infertile patients who were admitted to Gaziantep University, Faculty of Medicine, Department of Gynecology and Obstetrics. Patients with bilateral tubal block occlusion and Asherman syndrome were excluded from the study. HSG was performed after the menstrual period by using lipiodol ultra fluide 10 ml (Guerbet, France). Blood samples were obtained from all patients before HSG and at the 2nd and 6th hours after HSG. Serum levels of CA-125 were determined by the Elisa CA-125 II reagent kit (Roche) in all cases.

Serum levels of CA-125 were compared before and after the HSG procedure in order to determine any significant differences. Statistical analysis was performed with SPSS 10.0 statistical software and the paired-sample t-test was applied; $p < 0.05$ was considered statistically significant.

Revised manuscript accepted for publication September 30, 2004

Results

The average age of patients was 28.96 ± 3.72 years. Of the 32 patients, 17 had primary infertility and 15 had secondary infertility. Average time of infertility of the patients was 8.25 ± 3.87 years. The mean serum level of CA-125 was determined to be 14.11 ± 5.97 mIU/ml before HSG. The mean serum levels of CA-125 at the 2nd and 6th hours after HSG were 13.96 ± 5.80 mIU/ml and 14.06 ± 5.80 mIU/ml, respectively. There was no statistically significant difference between serum levels of CA-125 before HSG and at the 2nd or 6th hours after HSG, and also between the 2nd and 6th hours after HSG ($p > 0.05$).

The levels of serum CA-125 of all patients before HSG and at the 2nd and 6th hours after HSG are shown in Figure 1.

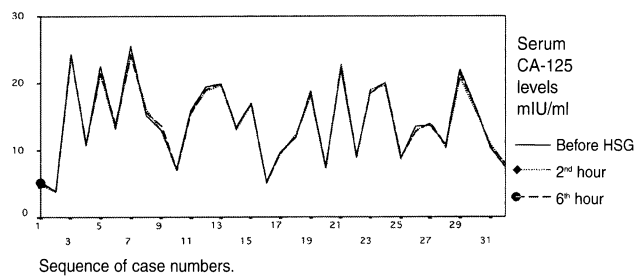

Figure 1. — Levels of serum CA-125 in all patients before HSG, and at the 2nd and 6th hours after HSG.

Conclusion

Since the discovery of CA-125 as a tumor marker, it has been widely used for the diagnosis and follow-up of serous tumors of the ovary. Finkler *et al.* reported that use of the increase in serum levels of CA-125 for the detection of a malignancy in 106 patients had a sensitivity of 50% and a specificity of 69% in the premenopausal period, and had a sensitivity of 78% and a specificity of 97% in the postmenopausal period [2].

Increases in the levels of serum CA-125 have been shown in other malignant conditions in addition to tumors of the ovary. In a report of two cases by Kato *et al.* it was shown that epitheloid sarcoma is associated with increased serum levels of CA-125, and that serum CA-125 levels are useful for the diagnosis and follow-up of the disease [3]. Bakhari *et al.* reported a case of cystic struma ovari with elevated serum levels of CA-125 [4].

Together with malignancies, many diseases are also reported to be associated with increased serum levels of CA-125. These include pelvic inflammatory disease, endometriosis, cirrhosis, adnexal torsion, benign ovarian cysts, ectopic pregnancy, ovarian hyperstimulation syndrome, fibroids, chronic renal disease and heart failure [5-10]. Bulsa *et al.* reported increases in serum levels of CA-125 in inflammatory states of the appendix and adnexa in addition to the well known endometriosis, and developmental malformations of the reproductive organs [11].

Increases in serum levels of CA-125 have been reported in some physiological states like pregnancy and menstruation. Kawabe *et al.* reported that the peritoneum is one of the tissues expressing CA-125, and in diseases which cause irritation of the peritoneum such as salpingitis, hyperstimulation and ruptured ectopic pregnancy serum levels of CA-125 tend to increase[1]. Bastani *et al.* reported that there is a relation between serum CA-125 levels and non-malignant ascites, and they showed that the fluid in the peritoneal cavity can stimulate secretion of CA-125 [12].

We have not found any reports up to date about the levels of serum CA-125 after HSG. In our study we did not detect any increase in levels of serum CA-125 at the 2nd and 6th hours after HSG in spite of peritoneal irritation. We propose that this finding is because leakage of radioopaque material to the abdominal cavity is minimal during the HSG procedure.

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