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# Vitamin A, Gonadotropins and Ovarian Cancer

## P.K. Heinonen

THE AETIOLOGY of ovarian cancer is still obscure. Ovarian cancer is common in countries, e.g. those of Scandinavia, with high consumption of milk products [1]. Cramer and colleagues reported that lactose consumption may be a dietary risk factor of the ovarian cancer [2]. This is linked to galactose consumption, and galactose metabolism with hypergonadotropic hypogonadism. Other dietary factors may affect gonadotropins. Vitamin A (retinol) is essential for reproductive function (oogenesis) in the female. It is also an important element in differentiation and proliferation of epithelial tissues [3]. Retinol cannot synthesised in the body and must therefore be taken in with the food. Milk is one natural source of fat-soluble vitamin A in the diet.

I have studied serum levels of retinol and gonadotropins in postmenopausal women with epithelial ovarian tumours. Serum was obtained from 52 women (mean age 64 years, range 48–83). 16 of them had epithelial ovarian cancer, 16 benign ovarian tumours and 20 were healthy controls without ovarian neoplasms. The samples were collected before any therapeutic intervention. Serum follicle-stimulating hormone (FSH) and luteinising hormone (LH) were measured by radioimmunoassay methods [4]. Serum retinol was measured by high performance liquid chromatography and ultraviolet detection [5]. Correlations were derived using a computer program for linear regression.

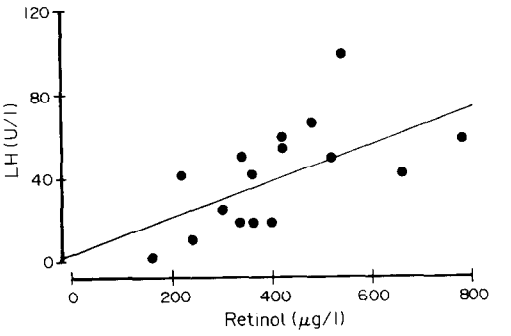


**Fig. 1. Correlation between serum luteinising hormone (LH) and retinol in postmenopausal women with ovarian cancer.**

A significant positive correlation ($r = 0.61$; $P = 0.012$; Fig. 1) was noted between serum LH and retinol concentrations in women with ovarian cancer, but not in patients with benign ovarian tumours ($r = 0.04$; $P = 0.88$) nor in control subjects ($r = 0.09$; $P = 0.72$). Serum concentrations of retinol and FSH did not correlate significantly in women with ovarian cancer ($r = 0.21$; $P = 0.94$), with benign ovarian tumours ($r = 0.09$; $P = 0.73$) nor in control subjects ($r = 0.229$; $P = 0.22$). The mean serum levels of retinol and gonadotropins were similar in three groups studied.

The relationship between retinol and LH has not been reported previously in women with ovarian cancer. Retinol may stimulate LH secretion or have LH-like effect on ovarian tissue. Retinol stimulates steroidogenesis *in vitro*, although the mechanism is not known [6]. According to one theory, increased stimulation of gonadotropins may directly or via steroid hormones affect differentiation, proliferation and malignant transformation of the surface epithelium of the ovary [7].

Retinol and its derivatives have, in general, anticarcinogenic potential in many epithelial tissues [3]. According to the present preliminary finding, retinol may have rather the opposite role in the pathogenesis of epithelial ovarian cancer.

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