Pleural effusion as a presenting symptom of ovarian hyperstimulation syndrome

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Pharmacological ovarian stimulation, a well-established therapeutic procedure in the field of infertility, has been widely used in the last decade [1]. This treatment modality has become the gold standard since the introduction of in vitro fertilisation (IVF). One of the more common complications of this treatment is the development of ovarian hyperstimulation syndrome (OHSS) which presents clinically in a mild form associated with ovarian enlargement, abdominal distention (grade 1), and with nausea or vomiting or both (grade 2). The moderate form includes ultrasonic evidence of ascites (grade 3), in addition to the other previously mentioned symptoms. A more severe form is associated with clinically apparent ascites with or without pleural effusion and dyspnnoea (grade 4) and sometimes presents as a life-threatening situation (grade 5) characterized by additional changes in blood volume, haemoconcentration, coagulation abnormalities and reduced renal perfusion and function [2]. Here, we report the cases of four young women with a clinical presentation of OHSS that consisted of dyspnnoea and cough due to pleural effusion. Their relevant characteristics are listed in table 1. All four patients had enlarged ovaries with a minimal amount of fluid in the Douglas sac; none had ascites. After evacuation of fluid, up to 7 days of rest and, in patients 3 and 4, cessation of the hormonal treatment, all the patients recovered fully. No evidence of pleural effusion was recorded in follow-up visits.

Discussion

We present four women with a mean age of 27 yrs who developed pleural effusion after hormonal treatment: one was being prepared for intrauterine insemination with concentrated sperm, one was suffering from infertility due to polycystic ovaries and two underwent treatment in association with IVF. In three of the four cases the fluid was located in the right side, it was exudative in all cases, the mean total protein was 47 g·L⁻¹, none had leucocytosis and all had normal lactate dehydrogenase (LDH) levels.

The differential diagnosis of exudative pleural effusion in young women includes a wide spectrum of diseases, mainly pleuropneumonia, collagen vascular disease (systemic lupus erythematosus, rheumatoid arthritis), pulmonary embolism, malignancy and tuberculosis. Together these diseases account for over 80% of all exudates while other unusual causes account for the rest [3]. OHSS is a complication of pharmacological treatment for ovulation in cases of primary and secondary infertility. It usually includes a combination of human menopausal gonadotrophin (Pergonal®) with human chronic
Ovarian hyperstimulation syndrome as a complication of hormonal treatment is usually mild in degree. The syndrome has a clinical spectrum ranging from a mild form, which accounts for most cases, to moderate and severe forms that occur rarely, but deserve special attention since they are life threatening. Pleural effusion accompanies the severe forms (grades 4 and 5).

The pathogenesis of fluid exudation in OHSS is still obscure. The coincidence with high plasma oestrogen levels is well established, but the cause-and-effect relationships have not been proved and are controversial [5]. A predominant role of increased vascular permeability and sequestration of fluid into a third space due to vasoactive substances has been suggested. High levels of prorenin and angiotensin II were found locally in follicular fluid, while high plasma renin levels were observed in the pleural space as the main pathogenetic mechanism of fluid formation in our cases.

We attribute the preferential right side location of the effusion to decreased lymphatic drainage as compared to the left side, as has been seen in congestive heart failure.

Ovarian hyperstimulation syndrome as a complication of hormonal treatment is usually mild in degree. The treatment is mainly supportive (bed rest and avoidance of further hormonal treatment), and the symptoms usually resolve spontaneously. We speculate that the presence of pleural effusion associated with ovarian hyperstimulation is more common than reported in the literature, since the effusion usually resolves spontaneously and chest radiographs are not done in most cases. Ultrasound and endocrine monitoring make prevention measures possible. This presentation aims to focus attention on the increasing prevalence of ovarian hyperstimulation syndrome which needs to be considered in the differential diagnosis of pleural effusion in young reproductive women.

### References