

# Markedly-elevated serum CA125 in a woman with pulmonary tuberculosis

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## ABSTRACT

**A 26-year-old Chinese woman first presented to the Singapore Anti-Tuberculosis Association with fever and cough, and was diagnosed with pulmonary tuberculosis. She was then referred to KK Women's & Children's Hospital to exclude a gynaecological pathology when she was found to have abnormally high levels of cancer antigen CA125 in a health screening done concomitantly. Pelvic examination and pelvic ultrasonography were normal. Other tumour markers (CA19-9, CEA, AFP and BHCG) were normal. The level of CA125 was monitored and returned to normal levels with anti-tuberculosis treatment. A non-gynaecological diagnosis like pulmonary tuberculosis must always be considered as one of a differential diagnosis in a woman presenting with a markedly-raised CA125.**

**Keywords:** cancer antigen 125, health screening, pulmonary tuberculosis, tuberculosis

*Singapore Med J 2009; 50(1): e39-e40*

## INTRODUCTION

Cancer antigen (CA) 125 has been shown to be closely related to conditions such as malignancy of the breast, lung, pancreas, ovary and some non-malignant conditions like endometriosis, hepatic cirrhosis and heart failure.<sup>(1,2)</sup> History is important to ascertain the appropriate investigations to exclude the differentials. There have been studies showing that a raised CA125 may be associated with pulmonary tuberculosis. In this case report, we show that pulmonary tuberculosis should be a differential diagnosis in a woman presenting with a markedly-raised CA125.<sup>(2,3)</sup>

## CASE REPORT

A 26-year-old Chinese woman first presented to the Singapore Anti-Tuberculosis Association (SATA) on February 23, 2004 complaining of fever and cough. A chest radiograph showed fairly extensive shadows throughout the right lung with fibrotic changes, which suggested pulmonary tuberculosis. She also underwent a standard health package, which included an assessment

of the serum CA125 level. Her CA125 level was 130 U/ml (normal range 0–35 U/ml) on February 27, 2004. Pelvic ultrasonography performed at SATA on March 4, 2004 revealed a normal-size retroverted uterus. Both ovaries appeared normal, with the pouch of Douglas being free of any abnormalities. Her anti-tuberculosis treatment was started on March 4, 2004 at SATA. She was prescribed rifampicin 450 mg, isoniazid 300 mg, pyrazinamide 1,500 mg and ethambutol 800 mg daily for six months. By April 1, 2004, a repeat CA125 level at SATA had risen to 818 U/ml.

She was then referred to KK Women's and Children's Hospital (KKH) to exclude a gynaecological cause of the markedly-elevated CA125 level on April 12, 2004. Pelvic examination and Pap smear were normal. CA19-9 serum level was normal at 37.3 u/ml (normal range 3–50 U/ml). Other tumour markers were also normal (beta-HCG < 1.2 IU/L, CEA 2.1 ug/L and AFP 1.7 ug/L). Her CA125 level assessed in KKH was 505.7 U/ml. Pelvic ultrasonography performed on April 19, 2004 remained unremarkable. The raised CA125 was assessed to be due to pulmonary tuberculosis, as there was no gynaecological abnormality detected. She was seen in KKH on April 26, 2004 for a repeat CA125 level which was 244.5 U/ml. There was a downward trend of her serum CA125 levels. By August 26, 2004, she had completed her treatment for tuberculosis. On September 27, 2004, her serum CA125 was 33 U/ml. She remained well on review a year later. The patient has since been monitored yearly and remained well.

## DISCUSSION

CA125 has always been closely associated with gynaecological conditions. However, based on history, we must always exclude non-gynaecological conditions like pulmonary tuberculosis. A study by Nakanishi et al in 1991 revealed that in cases of pulmonary tuberculosis, serum CA125 was markedly decreased one to two months after anti-tuberculosis therapy.<sup>(1)</sup> As shown in this case, the level returned to normal after six months of treatment. Treatment of pulmonary tuberculosis may only be associated with a downward trend after about a month of treatment. It is postulated that the treatment is mainly bacteriostatic, which triggers an increase in secretion of

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CA125 by the pleura before the efficacy of the therapy sets in. While gynaecological malignant pelvic masses are associated with a marked elevation of the serum CA125 level,<sup>(2)</sup> gynaecologists need to be aware that benign conditions like pulmonary tuberculosis may also be a cause. CA125 is also produced by normal epithelium (peritoneum, pleura and pericardium). In cases with elevated CA125, the patient's history and presenting complaint must be properly evaluated for the differential diagnosis. Noninvasive and simple investigations like pelvic ultrasonography and chest radiographs can be performed first. Computed tomography, which is a more tedious investigation, as compared to pelvic ultrasonography and chest radiographs, can be considered thereafter.<sup>(4)</sup>

In this patient, tuberculosis peritonitis was excluded as the patient presented with cough and fever, with no symptoms related to the bowel or abdominal masses. According to Tongsong et al, tuberculosis peritonitis

seems to have characteristic ultrasonographical features, especially the finding of peritoneal and omental thickening and ascites with fine, mobile septations.<sup>(3)</sup> Abdominal clinical examination and pelvic ultrasonography for this patient were also normal. A simple chest radiograph should hence be included when a woman is being investigated for markedly-raised serum CA125, especially without a notable tumour mass.

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