

**Re: The Clinical Usefulness of Prostate Specific Antigen:  
Update 1994 [Clinical Urology: Letter to the Editor]**

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A. W. Partin and J. E. Oesterling; *J. Urol.*, 152: 1358-1368, 1994

To the Editor. Oesterling published an extensive review on the clinical usefulness of prostate specific antigen (PSA) [1] and updated the study in 1994. Although both reviews cover adequately clinical and basic aspects of PSA in the area of urology, important new information on PSA was not mentioned. We wish to supplement the recent review with articles published in 1994 showing that PSA can no longer be regarded as a specific biochemical marker of prostatic epithelial cells.

We have recently reported that PSA is present in 30 percent of women with breast cancer. [2,3] The presence of PSA was associated with the presence of steroid hormone receptors. Women with PSA positive cancer tended to be premenopausal and to have early stage disease. PSA appears to be a good prognostic indicator for women with breast cancer and it could also be produced by metastatic breast tumors. [4] This phenomenon of PSA production by breast tumors could be reproduced in vitro using breast carcinoma cell lines. [5] PSA in breast cancer is present predominantly in its free, 33 kDa. form. Reverse transcription polymerase chain reaction analysis of ribonucleic acid (RNA) extracted from breast tissue and nucleic acid sequencing of the amplified cyclic deoxyribonucleic acid have shown that PSA messenger RNA in the breast tissue is identical to PSA messenger RNA in prostatic tissue. [6] The normal breast could also produce PSA after stimulation by oral contraceptives. [7] The milk of lactating women contains large amounts of PSA. [8] PSA was also found in amniotic fluid and in the serum of pregnant women. [9] More recently, we detected PSA in some ovarian, liver, kidney, adrenal, colon, parotid and lung tumors, [10] and others have found PSA in endometrial tissue. [11]

These data suggest that PSA can no longer be regarded as a specific prostatic marker and as a physiological molecule associated only with semen liquefaction. We propose that PSA is a ubiquitous biochemical marker that could be produced by cells bearing steroid hormone receptors under stimulation by endogenous or exogenous steroid hormones. Although we have not as yet identified a substrate for PSA production in nonprostatic tissue, recent literature and our studies suggest that PSA is a growth factor or a growth factor regulator. We believe that urologists should be aware that one of the best tumor markers that we currently use to diagnose and monitor prostate cancer is now emerging as a molecule that is present in many normal tissues, tumors and pregnancy-related fluids. The biological role of PSA in these conditions remains to be determined.

Respectfully,  
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