

## Role of Prostate Specific Antigen in Screening and Diagnosis of Prostate Cancer

**Dr. Nilima Jeebun MD, Department of Pathology, SSR Medical College, Mauritius**

Carcinoma of the prostate gland is one of the most common malignant tumours in men over the age of 45 years and in most countries is second only to carcinoma of lung. There is a lot of geographical and racial variation in the incidence of clinically evident cases, being higher in Americans and Europeans. However the rates of microscopic foci of carcinoma prostate are almost same all over the world. Environmental factors, diet and poor family history also play a role.

In Mauritius, the commonest carcinoma in men is colorectal, followed by carcinoma of the oropharynx and carcinoma of prostate ranks third as regards its incidence. Out of a total of 2922 cases of carcinoma in men, 258 cases were found to be of prostatic origin (8.8%), during the period 1997 –2001.<sup>#</sup> This means that a considerable morbidity and mortality is associated with this disease.

Early detection is therefore important. Several methods such as digital rectal examination, Prostate specific antigen, Percentage of free PSA, PSA Density, PSA Velocity, Transrectal ultrasound examination and biopsy are the various methods of diagnosis. Out of all these, the levels of PSA can be easily estimated and it is also a fairly good indicator of the progress of the disease, i.e. in follow up of cases. The implementation of PSA levels can be done without much difficulty in practically all government and private laboratories.

Prostate specific antigen is a tumour marker, glycoprotein in nature, which is produced by lining epithelial cells of prostate. Both benign and malignant cells secrete PSA, the secretion from malignant cells being almost 15 times more than from benign cells. It is 100% specific to the prostate gland. Reference values range from less than 2.5ng/ml below 50 years of age, to 5ng/ml above 50 years. Although it is a marker of choice for screening, diagnosis and most importantly follow up of patients of prostate cancer, it's level in blood is also elevated in prostatitis, benign prostatic hyperplasia and even after digital rectal examination. As it lacks both sensitivity and specificity especially in the diagnosis of early or localized carcinoma of prostate it's value in screening is controversial. Just as a high PSA

value does not always connote cancer, similarly a normal PSA level does not rule out malignancy. Nevertheless, it has been seen that those carcinomas, which were diagnosed through PSA estimation are more aggressive than those found on autopsies as latent cancers.

For better discrimination between malignancy and benign conditions of the prostate gland, a combination of PSA with DRE and free PSA, PSA velocity and PSA density proves to be more informative. PSA if combined with measurement of free PSA, i.e. an F/T PSA apparently avoids the need of unnecessary biopsies; it also increases the number of cancers detected. PSA < 3 ng/ml & free PSA > 18 % is suggestive of low risk.

Whether early detection of carcinoma prostate improves the outcome is also debatable. However, this is indirect evidence that those who undergo regular PSA screening are more likely to be diagnosed at an early stage of the disease. Many studies also indicate that early detection decreases deaths from cancer of prostate.

In the Government laboratories of Mauritius, the PSA is estimated only upon clinicians' request. On an average, around 100 cases are done every month and the estimated cost of each test is approximately 100 Mauritian rupees. This however excludes the cost of equipment, infrastructure, manpower and other logistics. Currently the Radioimmunoassay method is employed in Mauritius. Percentage of Free PSA and F/T PSA are not being done, as they are not requested by clinicians. This is also because PSA levels in Mauritius is done more for follow up of patients, rather than for screening and diagnosis of cancer of prostate per se.

To my mind, clinicians should be made aware of the need of routine, biannual screening of men, especially over the age of 50 years, by doing not just PSA, but also by F/T PSA determination. This would not add much to the cost. The expenses of treatment of patients with carcinoma prostate can largely be decreased if the disease is detected early and the morbidity associated with it can be alleviated, thus significantly improving the quality of life of people.

<sup>#</sup>Report of national cancer registry, Republic of Mauritius