Early Detection of Prostate Cancer

Pages with reference to book, From 359 To 360 .

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Early detection of any cancer implies that a specific test be employed in a selected subgroup of population, who consult (with an informed consent) for clinical evaluation for a symptom or symptom complex. Screening on the other hand is applying a diagnostic test to general population. To detect pathology earlier, it must be a significant health pmblem, must be recognizable at an early stage, treatment at an earlier stage must be reportedly more successful and the test must be tolerable, economical, reproducible, easy to perform, accessible and acceptable.

Prostatic cancer in the most common malignancy diagnosed in males beyond middle age and has shown an upward trend in recent years[1-5]. It is recommended that all males over 50 years of age with an expected survival over 10 years, should go for DRE (Digital rectal examination), PSA (Prostate specific antigen level) annually forearly anda TRUS (Trans-rectal ultrasound) wherever indicated for an early detection of prostate cancer[6]. Early detection of prostate cancer is all important and vital as all cancers at inception are organconfined and those who get anearly radical surgery done at this stage enjoy an equal life expectancy as age and physique matched controls without cancer[7] . Screening onthe other hand has the drawbacks of being not cost effective, with no life survival benefit observed and many latent cancers do not progress to overt disease in lifetime[8,9].

The detection rate of DRE is 1.7%, specificity 84-98%, sensitivity 69-89% and a positive predictive value 26-35%[8]. Anabnormal DREora significantly raised PSA lead to TRUS, a guided biopsy and thus an early diagnosis. DRE is a simple, safe and economical means of screening/detection. Abnormal DRE findings suggestive of malignancy are asymmetry, hard consistency, lack of mobility of overlying mucosa and palpable seminal vesicles.

PSA is a glycoprotein (senne protease) which liquefies semen, identified in seminal plasma in 1971 and a serologic test based on it was developed in 1980[10]. PSA is prostate specific and not prostate cancer specific, so abnormally high values can be encountered in non-malignant conditions and anaplastic tumors tend to produce less PSA than well-differentiated tumors[11].The normal value is 4-5 ng/ml. A value of 5-15 carries a risk of 20%, while a value >20 carries a 65% chance of malignancy. In addition to numerical value, density, velocity (speed of PSA rise over a period of time usually one year), age specific reference ranges, differential assays of various PSA biological forms and ratio of free to conjugated PSA (free PSA correlate with BPH while conjugate with alpha 1 chymotrypsin correlate with malignancy) are important determinants of malignancy. The specificity and sensitivity of PSA is twice that of DRE (digital rectal examination). There is a direct correlation between PSA density, size of prostate and PSA level. The PSA related detection rate is 2.6%, sensitivity 57-79%, specificity 59-68% and a positive predictive value as 40-49%[8]. Screening with PSA improves the diagnostic yield. PSA level correlates well with clinical stage, anaplastic grade and is a reasonably good predictor of treatment response and disease activity after treatment[12]. The clinical usefulness and efficacy of diagnosis is better placed by incorporating the PSA density (PSA value divided by TRUS determined volume), comparing age specific reference ranges, velocity of PSA, ratio of free to total PSA(F/TPSA lower in cancer) and ratio of complexed to total PSA (higher (C/T PSA incancer)[13-14]. The advantages of using PSA screening are simplicity, cost effectiveness if done in a defined risk group, detects early.curable disease, is reassuring for those who are negative and may reduce morbidity and mortality. The disadvantages are cost, time and work force consumed, detects microscopic and slow growing tumors, leads to anxiety in false positives arid many detectable malignancies never become clinical in lifetime. Presently it is impossible to predict which tumour will remain latent throughout life. The

median time of progression to clinical disease is 13.5 years and 4.75 years in TIa and Tlb disease respectively.
TRUS (transrectal ultrasound of prostate) related detection rate varies from 2.6-12.4%, specificity 41-79%, sensitivity 36-85% and a positive predictive value as 27-36%8. A good number of cases are not visualized with TRUS, but it ensures that all suspected hypoechoeic lesions arc biopsied and a glandular volume is accurately measured to calculate PSA density[15].
Chromogranin A and neuron specific cnolase (NSE) are also reported as markers of significance recently[16], but there is always a need for an ideal screening test. Screening is all-essential ma strong familial history and atayounger age[17].
Despite the observation that early detection can increase in the number of radical surgery with the aim of absolute disease elimination in medically fit patients of reasonable life expectancy; it is yet to be seen whether it will have a reasonable impact in a significant percentage of patients on overall survival, quality of life, associated morbidity and treatment response. It is established that screening increases early detection and survival in a selected population, but there is no evidence that it reduces mortality, If the prostate cancer related mortality declines in future, it will be an indication of real impact of screening and early detection apart from overdiagnosing latent cancer[15]. The emphasis and enthusiasm about early detection will fall apart if the future does not show a promise in successful treatment modalities[15].

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