Center for the Detection of Prostate Cancer in the State of Guanajuato: a four-year experience at the Hospital Regional de Alta Especialidad del Bajío

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ABSTRACT

Aims: To identify the prevalence of prostate cancer (CaP) in the population attended to at the Hospital Regional de Alta Especialidad del Bajío (HRAEB) over the last four years and the association with prostate specific antigen (PSA) values and digital rectal examination (DRE) of the prostate.

Materials and methods: A retrospective, observational, descriptive, cross-sectional study was carried out in which 239 medical records of patients that had at least one histopathologic study of the prostate obtained through transrectal ultrasound-guided prostate biopsy (TRUPB), transurethral resection of the prostate (TURP), or radical prostatectomy (RP) from the period that was analyzed. Each medical record was evaluated in relation to patient age, DRE, and PSA value before biopsy and histopathologic diagnosis.

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INTRODUCTION

Cancer is the first cause of death in the developed countries and the second in the developing countries. In 2008 alone, 12.7 million new cases were registered along with 7.6 million deaths due to some type of tumor. According to the GLOBOCAN study carried out in 2008, prostate cancer (CaP) is the second most frequently diagnosed cancer in the world and the sixth cause of death by cancer in men, reaching 14% (903 500) of the total of new cases and 6% of the total of cancer-associated deaths in men. Incidence varies in the different countries of the world, with the highest in Australia, the United States, Canada, and the Nordic countries. Caribbean men of African descent have the highest CaP mortality rates, but nevertheless, death from this disease has decreased in the developing countries. It is estimated that there will have been 240 890 (29%) new cases of CaP in the United States, occupying the first place in cancer in men and causing 33 720 (11%) deaths. This puts CaP in second place for death from tumors in men, following lung cancer. In Mexico 538 288 deaths were reported in 2008, and CaP ranked sixteenth in the general population with 148 (1%) deaths. It holds first place in death by cancer in men. The State of Guanajuato is in sixth place for death by CaP and reported 253 deaths in 2008, and is in third place for death by CaP in the postproductive population (over 64 years of age). Life expectancy in the general population is increasing in Latin America, and so the positive correlation with CaP incidence is expected. The jump in incidence is largely a result of the introduction of tests at the beginning of the 1990s that can provide early detection in previously undetectable CaP. Prostate specific antigen (PSA), described for the first time in 1979, is considered a useful support tool for diagnosis as well as for evaluating treatment response and follow-up in CaP patients. Unfortunately, diseases of the prostate, such as benign prostatic hyperplasia (BPH) and chronic inflammation also cause an increase in the release of PSA into the bloodstream. The main use of PSA is not diagnostic but rather is for ruling out who requires further evaluation. The traditional cut-off point of 4 ng/mL that has been used for identifying patients that require further study, has a sensitivity of approximately 75% for detecting cancer, but a specificity of only 40%. This means that if all men with a PSA > 4 ng/mL underwent prostate biopsy, more than half would not be diagnosed with cancer. In addition, there is a detection rate of only 25% for PSA in the ranges of 4-10 ng/mL. It is worth mentioning that with the results of the Prostate Cancer Prevention Trial (PCPT), cancer could be identified even in patients with PSA values under 1 ng/mL, without ruling out the fact that the higher the PSA concentration is, the higher the risk for cancer.

Keywords: Prostate cancer, transrectal prostate biopsy, prostate specific antigen, digital rectal examination, Mexico.
rectal examination (DRE) of the prostate, part of the CaP diagnostic evaluation, is dependent on the experience of the examiner. Abnormality detected during DRE signifies the presence of CaP in only 15 to 40% of cases. On the other hand, it should be noted that tumor extension is frequently overestimated with DRE. The combined use of PSA and DRE can considerably increase the probability of CaP detection. Since its introduction in 1989, systematic ultrasound-guided core biopsy has revolutionized the ability of the urologist to detect CaP.

The aim of the present study was to identify the prevalence of CaP in the population attended to at the HRAEB in its first four years of service, from 2007 to 2011, and to identify the association with PSA and DRE variability.

**METHODS**

An observational, descriptive, longitudinal, and retrospective study was carried out. The case records of 239 patients with some type of prostatic disease were reviewed. Patients that did not have a written record of their diagnosis in their case record were excluded from the study. Samples were obtained through transrectal ultrasound-guided biopsy (TRUS), transurethral resection of the prostate (TURP), or radical prostatectomy (RP) within the time frame of November 2007 to May 2011.

Each medical record was analyzed in reference to patient age, DRE, PSA values prior to biopsy, and histopathologic diagnosis. Patients underwent surgical procedures and biopsy carried out by the attending physicians of the Department of Urology and Interventional Radiology. Tissue samples were analyzed by HRAEB staff pathologists.

**RESULTS**

Nine patients were excluded from the total of 239 reviewed case records. Of the 230 remaining subjects with at least one histopathologic study of the prostate, 178 (74.48%) samples were obtained through TRUS, 39 (16.32%) through TURP, and 13 (5.44%) through RP. Mean age of the patients was 68.62 (40-91) years, 35 suspicious DREs were registered (palpation of nodules or consistency alterations), and mean PSA was 32.75 ng/dL (0.33-2265 ng/dL). The histopathologic studies reported the following results: 76 (31.8%) cases of adenocarcinoma, five (2.09%) cases of BPH, two (0.84%) cases of chronic prostatitis, 145 (60.67%) cases of BPH/chronic prostatitis, and two (0.84%) cases of prostatic intraepithelial neoplasia (PIN) (Figures 1 and 2).

Of the CaP patients, diagnosis was exclusively adenocarcinoma, and the patient ages ranged from 40-91 years (μ=69.5). The range of PSA was 4-792 ng/dL (μ=72.93), with the elimination of one patient with a PSA of 2265 ng/dL that altered the statistical analysis. DRE was carried out in 22 subjects and the examinations in 11 of them were suspicious. A Gleason score of 6 was the most frequently reported in the histopathologic diagnoses (Figure 3).
**DISCUSSION**

The *HRAEB* is a CaP referral center for both diagnosis and treatment, providing services to patients from the geographic center *El Bajío* of the Mexican Republic. We observed a positive diagnosis in suspected CaP cases in 33% of the patients and from a total of 239 patients there were early manifestations of PSA in three patients under the age of 45 years, coinciding with an elevated Gleason score, which is what predominates in the international medical literature. The relevant fact here is that the mean population with significantly elevated positive results is between 60 and 80 years of age. This represents a concentration of 68.42% of patients as positive, which is similar to the results of other studies carried out in Mexico. Furthermore, among the suspicious specimens sent for analysis, 64.74% were negative for malignant disease with results that were secondary to prostatitis and BPH. These data motivated us to emphasize the importance of early CaP detection in the centers that refer patients to the *HRAEB*, so that patients can be grouped together at earlier stages.

Of the CaP positive patients, 1.31% had a Gleason score of 4; 3.94% had a Gleason score of 5; 40.78% had a Gleason score of 6; 36.84% had a Gleason score of 7; 10.52% had a Gleason score of 8; 5.26% had a Gleason score of 9; and 1.31% had a Gleason score of 10 (Figure 4). A total of 77.62% of the patients were between 60 and 80 years of age. PSA values ranged from 4-792 ng/dL. PSA was 10-20 ng/dL in 30% of the patients; 4-9.99 ng/dL in 28%; 20-50 ng/dL in 16.66%; and 25% of the
patients had values above 50 ng/dL (Figure 5). It is important to stress that CaP detection has been on the rise at the HRAEB, allowing for better management of each patient (Figure 6).

■ CONCLUSIONS

The concept of a referral center in the HRAEB as a part of the health system offered by the Department of Health and Welfare of the State of Guanajuato has consolidated the detection of patients with probable malignant prostatic disease, initiating the performance of biopsies in these patients and their posterior individual management. Physicians are now referring these patients, having contemplated and communicated their possible CaP category. After these results, the necessary adjustments will most certainly be made so that patients will be referred earlier, in relation to PSA and DRE. This will improve detection time and especially have an influence on organ-confined staging, and thus enhance the quality of life of our patients in relation to disease-free periods.

REFERENCES

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