Clinical correlation, ecographic and levels of prostate specific antigen in patients with prostate cancer

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Purpose: this report provides information about clinical correlation, ecographic and levels of prostate specific antigen in patients with prostate cancer in the Regional Hospital from Trujillo, Peru.

Materials and Methods: retrospective, descriptive observation study of all the clinical histories from patients with histopathology diagnosis of prostate cancer during the period of January 2000 – December 2004. The sample was constituted by 60 patients with clinics histories, study by image based on the prostate ecography and the prostate specific antigen results. The average of age found was of 75.4 years old; the most frequent clinical case reported a 91.6% of patients with obstructive and irritative symptoms. In the levels of prostate antigen the PSA found values between 10-50 ng/ml, in 48.78% of the patients.

In the ecography prostate study there where evidence of hypoecogenic images in 56%, hyperecogenics images 12%, heterogenics images 20% and 12% homogenics images.

In the TNM classification the higher percentage is located in T stage with an 81.67%, and in smaller proportions in the N1 and M1 stages with 8.33% and 10.0% respectively. According to Gleason it was found levels from 2-4 with 36.67%, in the level 5-7 with 23.33% and in the level 8-10 with 40.0%.

Conclusions: All the patients with prostate cancer showed a clinical symptoms about, obstructive and irritative and in other organs a less percentage of symptoms that shows metastases; in more than a half of the patients, the digital rectal examination showed nodules and irregularities in its surface; in the prostate ecography it is report a higher percentage of hypoeceogenic images suggestive of neoplasia. The levels of specific prostate antigen in more than 70% of the patients where over of 10 ng/ml; in the totally of the patients the histological type most frequent is the Adenocarcinoma, with a high grade of percentage of patients who had been bad prognosticated according to the Gleason score. According the NTM, more of the two thirds parts of patients with prostate cancer are in T stage, with a high percentage extending on the prostatic capsule.

Key words: prostate specific antigen levels, histopathology diagnosis, prostate cancer.

INTRODUCTION

The clinical case of cancer happens largely in men older than seventy years old and its repercussion, about mobility and mortality disease, experiments a progressive increase with the age. In men this tumor pathology is considered like an important problem of health. Currently the European Economic Community reported 80.000 new cases. The mortality tax in Spain was of 23.48 by one thousand to the prostate cancer; in the United States of America there is an estimation of 400.000 cases of new diagnosis and 45.000 deaths, representing the second cause of death after the kidney cancer. In Peru, according to the Cancer Registration of Lima metropolis, there had been an increse in the incidence and mortality, because of prostate cancer.

Four reports had been registered about he incidence of cancer in Lima Metropolis, in the years 1969, 1979, 1991, 2000. According to these the incidence of prostate cancer by 100.000 habitants had been 5.89, 8.9, 12.7 y 13.2 respectively. The mortality tax by 100.000 habitants reported in 1969 and in 1991 was, 3.63 and 11.5, respectively.

In what risk factors refers, the afro American men are consider the group with the highest risk of the World (50%) more than the American men who are white. The men with familiar antecedents of prostate cancer have a higher risk to this disease. Men who realize hard works and the one who are exposed to certain metals and chemical substances with cadmium, dimetilformamida and nitrate acrylic, could have a higher risk. The smokers, the...
moderate ingestion – high of alcohol, the saturates fat and certain vegetal oil, increase the levels of testosterone in sedentary men\textsuperscript{8}

Most of the prostate cancer (70\%) was in the peripheral zone that represents the 70\% of the weight of the prostatic glandule. The transition zone (24\%) of the tumors and the central zone (8\%) of all the cases are the less frequented of this disease\textsuperscript{6}; this circumstance facilitates its eventual detection by digital exam of the prostate because the grown in central zones of the glandure are rares (%\textsuperscript{10}. After is possible to compromise to the pelvian ganglions and gave metastases to the bone preferably\textsuperscript{11}.

The diagnosis of prostate cancer established thru clinical studies and the gabinete: digital rectal examination, ultrasonography and serum markers, PSA\textsuperscript{12}. Another use of the ecography is the possibility to realize directed biopsies to the suspicious areas\textsuperscript{13,14,15}.

The specific antigen prostate is a glucoproteina produced by the prostate cells. It is weight by an exam that determines the concentration of this substance in the blood; it has been validated like an important tool to detect in initials stages the prostate cancer\textsuperscript{11,16}.

A value of PSA until 4 nanogrames per milliliters (ng/ml) is considered normal for a man promedium. Levels of PSA over 4 and until 10 ng/ml are considered high and they associated to prostate cancer around a 30\%. Values over 10 ng/ml are predictors of cancer in a 50\%. In patients of less age, between 45 and 60 years old, values of PSA between 2.5 and 4 ng/ml could indicated the presence of cancer so they must be controlled in a special way\textsuperscript{16}.

The classification system more use to describe in what size it has been propagated the cancer prostate is the TNM system. The T accompanies by numbers from 0 to 4, and indicates the size and extension of the own tumor. For example in the T1 stage, the tumor can’t be palpated or either be sawn by images techniques. It is sub classify at a time in the next way: T1 to (casual finding of cancer cells in a 5\% or less of the samples of the prostatic gland surgery not relation with cancer); T1c (cells of cancer with the biopsy where there are high levels of PSA). In the T2 stage, the cancer is localized only in the prostate and to the palpation is a small nodule and well define. T2a (the tumor is localized in the middle of a prostates lobules, T2 and T2c exists tumor in both lobules). In T3, the tumor extends to the capsule of the prostate, and in T4, is settled or invades adjacent structures.

The N follow of numbers from 0 to 3, refers if the cancer had been extended to the regional lymphatic ganglions, localized next to the prostate and in the pelvic region. In the N0 stage, doesn’t exist cancer in the ganglions. In N1, there is a small tumor in just one pelvis nodule; N2 indicates that there is a tumor of a medial size in one nodule or several nodules; in N3, there is a big tumor in one or more nodules.

In M stage refers to the metastases. In M0, there are not metastases; in M1a the cancer has been extended to lymphatic ganglions far from all those regional; M1b, indicates that the cancer had invaded bones; and in M1c the cancer had disseminated at distance\textsuperscript{19}.

Now is very important to establish the Gleason grade. The score of Gleason correspond to the cases well differenced for Gleason 2-4, differenced in a moderated way in the Gleason 5-7, and poorly differenced for the Gleason 8-10\textsuperscript{18}.

Finally, after doing a good diagnostic of prostate cancer, we found that there is a progressive increase in mobility and mortality in all over the world. That is the reason why we have done this study in the Regional Hospital from Trujillo – Peru (north of the country), because there aren’t
investigation about prostate cancer in our Region (the north of Peru). And this will help to improve: the prevention, diagnostic and treatment of this disease.

**MATERIAL AND METHODS**

We made a retrospective descriptive and observational study of all the clinical histories from patients with prostate cancer histopathology diagnostic. At the Regional teaching Hospital from Trujillo, Peru, during the period January 2000 to December 2004. The sample was constituted by 60 patients whose histories are with complete clinical details, serum markers (PSA) and prostate ecography. The classification by clinical stages and the histopathology grade was realized by the system that is proposed by the American Joint Committee on Cancer (AJCC) manual. 6th ed. 200219,20

The data where recollected and processed by the software SPSS release 12.5 and presented in cases with absolute frequencies and perceptual for the evaluated variables with statistics descriptive like the media and standard deviation.

**RESULTS**

The table 1 shows the distribution of age of the patients with histopathology diagnostic of prostate cancer. The group with the higher frequency of age belongs to the interval 70-79 years old with 28 patients. The average of age found was of 75.4 years old.

In the table 2, it is shown the histopathology diagnostic of prostate cancer, for the period. In study finding the bigger number of cases in the years 2000 and 2004 (30% and 23.33% respectively)

The table 3 belongs to the signs and symptoms more frequent, finding in all of them obstructive and irritative symptoms.

The table 4 we found an 8.33% like normal diagnostic and the other percentage like digital abnormal diagnostic.

The table 5 shows the levels of specific antigen prostate with the greatest number of cases when the PSA is between 10-50 ng/ml with 48.78%

In the ultrasonic valuation (Table 6), we found that the hypoeccogenics image is the most frequent (56.67%), followed by the heterogenic images (20.0%) and with similar percentages between hiperecogenics and the homogenous images.

About stage of prostate cancer, in the table 7, it is showed that according to the TNM classification the mayor percentage it is located in the T stage with an 81.67%, and in lower proportions in the stages N1 and M1.

Finally in the table 8 we found according to Gleason Score, levels from 2-4 with 10 with 36.67%. In the level 5-7 with 23.33% and in the level 8 – 10 con 40.0%

**DISCUSSION**

In our Regional Hospital of Trujillo (North of Peru) the prostate cancer has been increasing between the years 2001 to 2004, in relation to the world statistics. Probably, this might happen because of the missing programs to early detection and unknown of the population about this disease. This conditions patients to do use of the health service when they showed the urinary disturbs in advanced cases. An in other cases it is detected earlier, when in the general clinical checking detects at time the disease in initials stages.

All the patients shows symptoms as obstructive as irritative, and a small percentage of these shows hematuria and osseous pain, which corroborates the grade of compromise of adjacent structures and at a distance of the prostate, this also will explain by a retrace in the diagnosis because if this happens earlier, we will probably not find simptomatology.

In respect to the digital rectal examination, the literature reports that the 50% of the suspicious lesions of malignity in clinical exams are positives to carcinoma.

The 100% of the patients who were diagnostic with prostate cancer have values of PSA over the 4 ng/ml, which 29.27% are in a range of 4-10 ng/ml and that the 70.73% of these are with estimation of PSA over the 10 ng/ml. The high levels found are explain because the PSA are directly relation with the progression a stage of the
CP, and justify its found because in our population the diagnostication happens very late.

There are data that support that tumors of the highest grade used to be more hypoecogenic. In our study there was found a 56.67% of the ecographies of the patients with CA of prostate.

At doing (realizing) the prostate cancer stage of the patients in the study it was founded a 81.67% in T stage where 5 patients where diagnostic like T1, which refers to a tumor that had not been palpated when the prostate digital examination was done, but in the one that was found cancer cells in a biopsy sample of the prostate of the prostatectomy. There was also found in T2 18 patients, what means that prostate cancer was palpated at the moment of the digital rectal examination and it is considered that the cancer still being limit to the interior of the prostate. By the other hand, in the T3 18 stage, patients evidence that the tumor was propagated by the connective tissue located beside the prostate or the seminal vesicles, but without compromise other organ, and in T4 was found 5 patients which cancer have been propagated to adjacent tissues like the neck of the bladder however there were not found propagation to the rectus either to the wall of the pelvis.

In the higher of prostate cancer, it was found 5 cases in N stage engaging the regional lymphatic ganglions and finally 6 cases in M stage what means propagation to distant organs, which it was reported two metastases cases at a level of the axial skeleton M1b, two other sin no regional lymphatic ganglion (M1a) thru a nodule of Virchow and the two last reported cases with bone metastases in the lung (M1c)

The tumors that showed higher grades of Gleason classification with higher tax tumor progression ad distance and independent to the local extension of the disease.

It was found that the 40% of prostate cancer with Gleason 8-10 being the most probably that the cancer grows and extends very quickly, all different happens with the patients that had a low score 2-4, that belongs to the 36.67% where the prognostication is good because they are tumors with show slowly growing and limit to the gland.

**CONCLUSION**

All the patients with prostate cancer showed urinary symptomatology, obstructive as well as irritative and in lower percentage osseous pain that shows a probably metastases.

In more of the half of the patients with prostate cancer, the digital rectal examination showed small nodulations and irregularities in its surface and consistence.

The ecography of the patients with prostate cancer reported a 56.67% of the hypoecogensics images suggestive of neoplasia.

The levels of the prostate specific antigen in more of the 70% of the patients with prostate were over the 10 ng/ml

In all the patients the histopatogy is the adenocarcinoma with a high percentage between high levels of Gleason.

According to the TNM classification. Two thirds of the patients are in Tm stage, with a high percentage at the prostate capsule

<table>
<thead>
<tr>
<th>Stage</th>
<th>No of cases</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>T</td>
<td>49</td>
<td>81.67</td>
</tr>
<tr>
<td>N1</td>
<td>5</td>
<td>8.33</td>
</tr>
<tr>
<td>M1</td>
<td>6</td>
<td>10.00</td>
</tr>
<tr>
<td>TOTAL</td>
<td>60</td>
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**SUMMARY**

Ovaj rad daje informaciju o kliničkoj korelaciji, ultrazvučnoj kao i nivou PSA kod pacijenata sa karcinomom prostate u regionalnoj bolnici Trujillo u Peruu. Materijal i metoda: to je retrospektivna i deksriptivna studija svih istoriija bolesti sa histopatološkim analizama, dijagnostičkim karcinoma prostate od januara 2000 do decembra 2004. godine. Uzorak čini 60 bolesnika sa kliničkom anamnezom, a studija je bazirana na ultrazvučnim pregledima prostate i nivima PSA kao i rezultatima nivoa PSA u krvi. Srednje godine starosti bolesnika bile su 75,4, a u 91,6% slučajeva u kliničkoj slici su dominirali irritativni i opstruktivni simptomi. Vrednosti PSA u krvi kretale su se od 10 do 50 ng/ml u 48.78% slučajeva. Prilikom ultrazvučnog ispitivanja prostate, hipoechozne zone su evidencirane u 56% slučajeva, hiperechozne u 12%, heterogene u 20% i homogene u 20% slučajeva. Koristeći TNM klasifikaciju, najveći procenat tumora bio je u T stadijum (81.67%), u N1 je bilo 8,33%, a 10% je imalo M1 stadijum. Prema Gleason score nadjeni su nivoi od 2-4 kod 36,7%, kod 5-7 u 23,33% a kod 8-10 u 40% slučajeva.
Zaključak: svi pacijenti sa karcinomom prostate pokazivali su kliničke simptome opstruktivne i irritativne, kao i na drugim organima u malom percentu, koji su ukazivali na prisustvo metastaza. U više od polovine bolesnika, digitalni rektalni pregled pokazivao je postojanje nodula i neregularnost povrinely prostate. Ultrazvučni pregled pokazivao je visok procenat hipoechogenosti, to je ukazivalo na neoplazmu. Nivoi PSA u više od 70% bolesnika bili su preko 10 ng/ml. U svih pacijenata radilo se o adenokarcinomu visokog gradusa koji su imali lošu prognozu prema Gleason scoreu. Prema TNM klasifikaciji, više od 2/3 bolesnika bili su u T stadijumu sa visokim procenom zahvatanja kapsule prostate.

Ključne reči: nivo PSA, histopatološka dijagnoza, karcinom prostate.

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