HISTO-MORPHO- BIOCHEMICAL FINDINGS OF THE RESIDUAL PROSTATE (III):
“UNDetectABLE” PSA MAINTAINED AFTER RETROPUBIC ADENOMECTOMY
FOR BPH

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Summary.- OBJECTIVES: To present 4 cases with “undetectable” PSA levels (PSA <0.15ng/ml) on long-term postoperative follow-up after retropubic adenomectomy for BPH

METHODS: They come from a series of 70 consecutive cases of retropubic prostatic adenomectomies, monitored and controlled at the hospital in their biochemical, histological and morphometric analysis for 5 years following the intervention.

RESULTS: Four patients have demonstrated PSA levels <0.15 in all controls after surgery. Mean follow-up of the global series: 45.25 months. There is correlation between this determination and histological and morphometric data, when they were achieved.

CONCLUSIONS: “Undetectable” PSA after open prostatic adenomectomy could be an equivalent to the expression of “radical cure” of BPH, and a reliable marker for monitoring neo-hyperplasia.

Keywords: PSA. Retropubic adenomectomy. BPH.

Resumen.- OBJETIVO: La presentación de 4 casos que, intervenidos de adenomectomía retropústica por HBP, han presentado, en los controles postoperatorios de PSA, cifras “indetectables” del antígeno (PSA<0.15ng/ml), de forma mantenida a largo plazo.

MÉTODO: Proceden de una serie de 70 casos consecutivos intervenidos por vía abierta de HBP que han venido siendo seguidos y controlados, a nivel hospitalario, en sus aspectos bioquímico, histológico y morfométrico durante los 5 años siguientes a la intervención.

RESULTADOS: Cuatro pacientes han demostrado cifras de PSA < 0.15 en todos los controles que se han establecido a partir de la cirugía hasta el momento presente en el que, en conjunto, supone una media de seguimiento de 45,25 meses. Ha existido una concordancia de esta determinación con los datos morfométricos e histológicos, cuando se han conseguido.

CONCLUSIÓN: La “indetectabilidad” del PSA después de adenomectomía prostática abierta podría suponer...
INTRODUCTION

The clinical application of PSA, since the 80s has come to mean the best tool we have for early diagnosis of prostate cancer even with the disadvantages in many cases because of its insufficient specificity. But not only what we are implementing in prostate cancer but also in BPH (largely producing PSA) as expressed by well-known studies that establish parameters to guide the progression of the same (acute urinary retention and / or surgery) between the prostate volume and the PSA (1).

For some years we have established our interest in the so-called “residual prostate” resulting from the enucleation surgery for BPH. It is a subject little discussed in the literature, but the fact of the expectation of life of men in this country makes it plausible that one can be operated by BPH neohyperplasia or for prostate cancer, over time, so it seems interesting to predict these possibilities.

This has been already published in two papers (2,3) and has been in the course of inspections of these initial 70 cases that we have found four that are the subject of this article that basically seeks only the communication of a singular fact that, though in colloquial relationship with our colleagues tell us they have experienced “some cases”, the truth is that we have not found any specific references in the consultation “PubMed” even in those with changes of PSA after open adenectomy, TURP or HoLEP (4-12).

MATERIAL AND METHODS

A few years ago we began to study the residual prostate after open surgery following the protocol consisting in histological data in the residual prostate during surgery and in the mid-term, between 12 and 36 months, by endoscopic loop of resector. Morphometric data obtained from the prostate using transrectal ultrasound in the 3rd postoperative day and then randomly in the course of 5 years of follow-up, and biochemical PSA annually during that period. We have shown these results previously in the references already cited.

It was, therefore, during this follow-up that we found 4 cases with an “undetectable” PSA after surgery (one at 5 years, another at 4 and two at 3 years) remaining unchanged at <0.15 ng / ml in all cases.

This fact led us to select these cases for analysis from other points of view with the intention of establishing whether there were in common:

Case 1

D.P.G., 71yr. No history of liver disease. Since 1998 refers low urinary tract symptoms (LUTS). In 2002 a PSA 7.6 ng /ml. A prostate biopsy was performed with the outcome of BPH and chronic prostatitis. In the digital rectal (DRE) examination scored a “medium/large gland without nodules”.

Transrectal ultrasound (TRUS) showed a gland of 94cc.

It was performed an open prostate adenectomy (transcervical hemostatic adenectomy (ATH) + vesicocapsuloplastia(VP)) with a preop PSA of 6.35 ng / ml. The surgical specimen was 80 gr. The pathologic analysis confirmed the preoperative diagnosis, and the residual-tissue biopsy revealed “lack of glandular tissue with seminal vesicles wall fragments” (Figure 1).

TRUS at the 3rd postoperative day showed a residual tissue of 0.4cc.

Then annually followed with PSA (<0.15 ng / ml) and at 17 months a TURP with another residual-tissue biopsy, showing “lack of glandular tissue.” and a TRUS, reporting “residual tissue after surgery equivalent to 9gr”. At 60 months the PSA continues “undetectable” (<0.15ng/ml).

Case 2

P.V.S., 66yr. No history of liver dysfunction and history of LUTS for 3 years, cystoscopy for haematuria with no bladder tumour but obstructive and bleeding prostate lobes. With a preop PSA of 8.72 ng/ml and an abdominal US reporting an 86cc prostate gland (?) It was performed an open prostate adenectomy (ATH + VCP). The surgical specimen was 130 gr(!) of prostatic hyperplasia and the residual-tissue biopsy revealed “a few glands”. TRUS at the 3rd postoperative day, we had “technical problems” that prevented us from having the image ...

... PSA controls were always undetectable up to 53 months. We performed a TRUS with a residual tissue
equivalent to 9gr. (Figure 2). We could not perform any other residual-tissue biopsy due to the patient’s negative.

**Case 3**

G.N.G., 76yr. Prostate biopsy in another center for high PSA (?) with no neoplasia reported. LUTS with an abdominal US describing a 79cc prostate gland with mid-lobe and a PSA of 1ng/ml, proceeding with the adenomectomy (ATH + VCP) removing a piece of adenomatous 75grs. and a biopsy of residual “with 3 small gland atrophy”.

Determinations of PSA remained always <0.15 ng/ml to 36 months later, with liver function “normal”.

**Case 4**

A.M.U. of 72 years. Several years of LUTS development with very slightly increased

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**TABLE 1.**

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Residual histology</th>
<th>3rd day US</th>
<th>Prostate Biopsy</th>
<th>Long-term TRUS</th>
<th>PSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case 1: 80 grs. Nodular Hyperplasia</td>
<td>No glandular tissue</td>
<td>Residual:0,4cc</td>
<td>No glandular tissue</td>
<td>9 grs at 4 yr.</td>
<td>&lt;0,15 (60 mo)</td>
</tr>
<tr>
<td>Case 2: 130 grs. Nodular Hyperplasia</td>
<td>Few glands</td>
<td>-</td>
<td>-</td>
<td>9 grs at 53 mo</td>
<td>&lt;0,15 (48 mo)</td>
</tr>
<tr>
<td>Case 3: 75 grs. Nodular Hyperplasia</td>
<td>Atrophy + 3 glands</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>&lt;0,15 (36 mo)</td>
</tr>
<tr>
<td>Case 4: 150 grs. Nodular Hyperplasia</td>
<td>Few glands</td>
<td>-</td>
<td>Fibrosis + smooth muscle</td>
<td>Not identified at 20 mo</td>
<td>&lt;0,15 (37 mo)</td>
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J. J. Ballesteros Sampol, J. Gimeno Beltrán and L. Fumadó Ciutat.

PSA who were not assessed before the present prostatomegaly (129cc at TRUS) An ATH+VCP was performed, enucleating 151gr. of “hyperplasia” while the biopsy showed only residual “fibroadipose tissue with chronic prostatitis”. At 19 months we had residual tissue histology with the outcome of “urethral epithelium, smooth muscle, fibrosis and glandular absence” (Figure 3). TRUS at 18 months did not identify “measurable prostatic remnants.” The PSA still undetectable at 37 months after surgery with no liver dysfunction.

RESULTS

The PSA produced by prostatic epithelial component is poured on one side to the light gland and on the other enters the bloodstream where it is determined to get the value that typically we ask the lab.

We have a great experience from the 80’s on the follow-up of prostate cancer treated with radical prostatectomy by PSA determinations. An effective surgical treatment leads in an “undetectable” PSA (<0.15) at follow-up.

What about surgery for BPH? According to data from our own study, retropubic surgery for BPH removes, on average, just over 80% of the entire prostate gland, being the 20% residual formed by peripheral tissue and the capsule. In our serie, mean PSA value after adenomectomy decreases by 83%.

There is a good correlation between the two values, volume and biochemistry, so it seems reasonable to expect it too in these four “unique” cases.

From the development of BPH we know that part of the transitional zone and periurethral sreads outward on the peripheral zone and the urethra. It seems logical to think that the bigger the transitional zone is, the smaller the peripheral zone will be. Our 4 cases have in common “large prostates”, with absence or very little presence of glandular tissue in the residual prostate tissue and a minimal representation of the gland on ultrasonography.

Therefore it seems plausible that, in cases of great development of the transition zone with BPH, will be able to produce such a rejection of the peripheral zone that compression and ischemia could cause atrophy and its virtual disappearance. The undetectable levels of PSA should be interpreted as an evidence of “radical” surgery by translating the absence of glandular epithelium generator.

We found no reports to base the actual frequency of undetectable PSA after prostatic retropubic adenomectomy. So, we reviewed our own in the 1994-2001 period which were computerized (184 of more than 1000). Of this 184, we found 2 cases of PSA <0.15 ng/ml (1.04%). The follow-up was 36 and 19 months respectively, closed in 1998 and found no history of liver cirrhosis that can lead to hormonal imbalances which could explain such a dramatic decrease in PSA. We tried to obtain an actual control of them, but even contacting them, their current ages of 87 and 92 years and the difficulty of travel have made us desist from this.

Globally, we have a rate of undetectable PSA after surgery of 2.3% if we take under consideration both series.

CONCLUSIONS

Periodic determinations of PSA after BPH surgery can be a powerful tool to detect recurrent hyperplasia or even prostate cancer.

Our current approach reaffirms that it cannot keep the cut-off in postoperative residual prostate admitted in 4 ng/ml for “no intervention”. Therefore it is necessary to look for those patients who show any rising PSA, PSAD and its kinetics. An indication of prostate biopsy could be established, in principle, in 2 ng/ml, considering age and comorbidities. This criteria must be validated in prospective studies in BPH surgery.

FIGURE 3. Prostate Biopsy 19 months after surgery of the 150 gr glans. Absence of glandular tissue, changes of vascular tissue with a lymphoid infiltrate, chronic inflammation and Von Brunn nests (4x0, 5).
REFERENCES AND RECOMMENDED READINGS
(*of special interest, **of outstanding interest)