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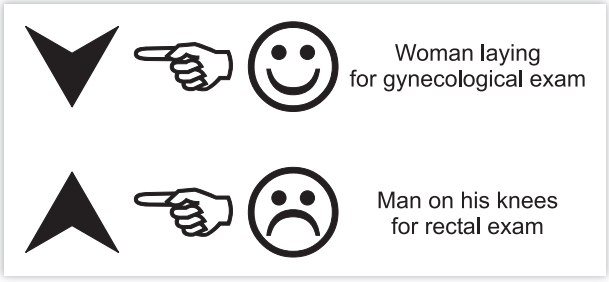
Women versus Men: Dear God, help me find if we are equal

I recall December 1976. I was in my last year of medical studies. One more patient, male, 62 years old, was admitted in the hospital for severe bone pain, loss of appetite and fatigue. Diagnosis: metastatic prostate cancer. He died two months later. The primary cancer was just 3 mm in diameter. This was an adequate explanation for the lack of urinary obstruction symptoms in this patient.

His wife, 57 years old, had undergone right mastectomy for breast cancer 10 years before and hysterectomy 2 years later, when Pap smear test revealed a cervical cancer *in situ.*

This was "unfair". God (who ever) created men and women to be equal. This is how I have been raised. So, if women were lucky to benefit from a Pap test, why not us? Where is our equal opportunity?

I took a piece of paper and drew:



What could be in common? Squeezing! Aha! Benign Prostate Hypertrophy (BPH) develops from the inner zone of the gland. On the other hand, Prostate Cancer (PC) usually develops from the outer zone. Is any teleological explanation to that? What if to be handy, reachable with rectal examination? As in women! Easy to touch, more importantly, easy to squeeze out the "unknown marker" from the malignant area. Directly from the production site! Something to mimic Pap test? Remember, equal opportunities.

O.K.! What should we look for? What is "that", different, quantitatively and/or qualitatively, among normal, hypertrophic and cancerous prostate? We all know Prostate Acidic Phosphatase and Prostate Specific Antigen in blood samples and we are familiar with the too many debates concerning their selectivity and specificity [1,2].

The same story with, first to think, hormone plasma levels. Testosterone plasma levels have been found normal, elevated or subnormal [1-3]. And so on.

But this is not the issue. The real issue is something in the tissue that could be squeezed from and detected in, let it be, prostatic fluid. Here is the first problem: it is not always possible to collect 100-200 μl of prostatic fluid. Solution: Stamey-Mears collection of urine samples. And more simplified, urine collection once before and once after prostate massage. And then? Zinc? Ascorbic acid? Protamine? Markers of oxidative stress? Proteins? Genes? Please, don't talk to me about genes. They became like jeans. Worn in all cases.

Overcome all the above. And look more carefully in the tissue. Can you recognize mast cells [4-6]? These admirable cells? They were there from the beginning. Age doesn't challenge them. But you can see differences in BPH and in PC. On a local level, you can differentiate them into mucosal or connective. Into tryptase or tryptase and chymase subsets. There, to benefit or destroy. Of course, by secreting. Secreting, among others: glycosaminoglycans, dermatan, heparan, chondroitins, hyaluronate. Too much chondroitin in BPH (marker to tumor progression?), too much hyaluronate (and hyaluronidase activity) in PC. Too many again approaches and suggestions. Arcadi (1988), was the first to use metachromatic staining of the prostate gland [7]. There are more followers. Keen studies have demonstrated excellent data [8-17]. But one is for sure: Glycosaminoglycans are there, in the cell surface and in the extracellular matrix, moderating the stromal-epithelial interaction, by being involved in cell proliferation, cell adhesion, and cell motility [18-20]. A lot of theoretical background and experimental data, who cares?

I do. We do. All men do. And women do, if they love men. As we love them. I have a dream: To add color in my life. For my life. A metachromatic reaction

could make me equal to women. Here is the principle:

GAG^-: no reaction

D^+: orthochromatic reaction

$GAG^- + D^+$: → (GAG-D): metachromatic reaction

$GAG^- + D^+ + S^+$: → (GAG-S) + D^+: inhibition of metachromatic reaction

$GAG^- + D^+ + S^+ + S^-$: → (GAG-D) + S^+: metachromatic reaction

$^-$ = acidic, $^+$ = basic, D = dye, S^+ = sample with known inhibitor of metachromatic reaction, S^- = sample containing GAGs

Hold my horses! Before you start dreaming of a SIT-test we have to find the differences in glycosaminoglycans in urine samples from normal, hypertrophic, infectious, and cancer prostate patients. Selection of patients, sensitivity of the methodology in measuring the glycosaminoglycans, staging, follow up, cost, to mention some of obstacles of such approach. I did not emphasize specificity, since glycosaminoglycans' source is specific.

Preliminary studies: what we are doing now is to walk the early steps. We are collecting urine samples (before and after prostate squeezing) from healthy volunteers (aged >50) and from untreated patients with prostatitis, BPH and PC in order to undergo quantitative and qualitative glycosaminoglycans' determination. We keep all their medical records, of course.

And we pray: Dear God, please, within the next few years send me evidence to prove that, yes, men and women are equal. Concerning you, just cross your finger!

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