

Running Title: Anogenital distance in chronic prostatitis

Can Short Anogenital Distance Cause Chronic Prostatitis?

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Abstract

Chronic prostatitis/Chronic pelvic pain syndromes (CP/CPPS) are a widespread pathology with unknown etiology without a proved treatment algorithm. Neurologic, endocrine and immune systems, and oxidative stress, infections are ranked in the physiopathology.

Anogenital distance (AGD) as a marker for the degree of antenatal exposure of androgens that link to some disorders of androgen-sensitive tissues especially of urogenital system. In this study, we aimed a construct a hypothesis that improper development of perineum and pelvic bottom due to the insufficient embryologic androgen exposure, which can be detected by reduced AGD, can form histologic/clinic CP in adulthood through the physical forces that resulted in stretched prostate via chronic hypoxia induced oxidative stress and failed immune mechanisms. AGD, unlike the previous published ones, suggested as a real physical scale to detect narrowed pelvic bottom other than an endocrine related biomarker.

Key Words: Chronic prostatitis; Chronic pelvic pain syndromes (CP/CPPS); Anogenital distance; etiology of CP; treatment of CP

Chronic prostatitis (CP) with largely unknown etiology is pathology without proved treatment strategy (1). Immune dysfunction and elevated oxidative stress that both may be triggered by local ischemia are some reported physopathologic events in the etiology of CP besides the ranking the endocrine, neurologic and infectious ones (2-4).

Anogenital distance (AGD) is correlated with antenatal androgen activity and associated with some androgen-sensitive disorders such as prostate cancer, male infertility, hypospadias, cryptorchidism and extends to BPH and premature ejaculation (5-6). However, unlike the previous ones, our aim is to point the possibility of this physical marker as a physical dysfunction, not the endocrine related disorder, defining the etiology of CP through the physical compression inside the narrowed perineum.

Perineal wall can be considered as the bottom of pelvis that roughly may be defined geometrically as the apex of the reversed cone. While the external superficial anatomical tip of this cone was noted in an anterior-posterior line as AGD, the internal side of this anatomical line mark behind the perineal wall can be expressed as the place between lower urinary tract mainly urethra and rectum. Prostate is the unique parenchymal organ without a true capsule of this location, thus, it is not illogical to hypotheses that narrowing of this internal side of cone may compress directly and chronically the parenchyma of prostate with its neurovascular bundle that result in chronic hypoxia. In this mechanism, we think that posteriorly-Denonvilliers fascia and anteriorly-os pubis have the special role that reflecting the pressure on the prostate. Moreover, the ability of stabilizing effect of urethra, prostatic ligament and endopelvic fascia, should be mentioned among the stabilizers in freezing prostate in any direction including lateral movements which prevents to avoid the direct chronic pressure on prostatic tissue. Furthermore, in the current treatment of CP, the resolving of the constipation is the initial goal of the clinician as the first step of management strategies due to the foresight to get rid of internal pressure of the colonic-rectal involvement to reduce the intra-abdominal

pressure on the neighborhoods locations. The strength of compressor mechanism may deem to increase by narrowing of the defined area that can be estimated by measurement of AGD in regard of the aim this study. This zone incurs the highest gravity pressure that give rise to the “pelvic organ prolapses” in women, however there is no real counterpart pathology in men related with trapped strain. In parallel, this up position may superpose the severity of lower abdomen venous pathologies such as hemorrhoids and pelvic congestion syndrome that all thought to have common origin (7-10). Moreover, flavonoids with their beneficial effects on vessels are well-known systemic medication for revealing rectal hemorrhoids also showed to be effective in CP treatment that confirms varicose impairment extends to prostate in theory (11). As a result, the accumulation of hydraulic venous pressure also seems to increase the intraprostatic strain, or vice versa. Present defined condensed physical pressure on prostate facilitates to occur intra/periprostatic varicose disorder may appear clinically as CP. All in all, as a sub hypothesis, we claimed that prostate also the target of varicose disturbance as its anatomically neighborhoods structures.

We think that the histological appearance of this mechanism, that resulted from local inflammatory reaction related with improper immune response and oxidative stress due to the chronic hypoxia, reported as CP (60-80%) and no bacterial induction confirmed in most of them and even this hypoxic media can also induce bacterial one (12).

In-utero anti-androgens/estrogens were also showed to induce dose dependent histologic postpubertal prostatitis in animal models (13). Actually it may be presumed that early androgen insufficiency which the cause of shortened AGD, also prepare the histologic/clinical basement for CP that superpose impact of ischemia induce CP later in adulthood life described in the present hypotheses. Nevertheless, do we also speculate that there is no separate endocrinologic etiology in CP without the mechanism of shortening AGD and the present mechanism begin to work in intrauterine life and progress life-long via accumulation of the ischemic inflammation?

It should be reminded that perineal “pain” and “tenderness” are some of the common symptoms of CP that may arise prostate itself or the perineum which surely be the direct target of synchronous above mentioned physical forces and chronic ischemia at the external side of prostate location (14).

To conclude, AGD can not only supply information about the male disorders of urogenital system via embryologic hormonal pathways, but also, may be a physical sign of the histologic/clinical prostatitis and this may lead novel decompression surgeries.

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