

Ventral Penile Papillae as a New Anatomical Structure: A Clinical-Epidemiological Study Among Iraqi Males

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ABSTRACT:

BACKGROUND:

Ventral Penile Papillae (VPP) are benign asymptomatic structures that are found on the skin of the ventral aspect of penile shaft of many adult males; yet, no frank record or description of them is found in the English medical literatures.

OBJECTIVE:

To hit light on the VPP, finds their frequency among circumcised Iraqi adult males, seeks about their associations with other skin conditions, and examines the histological picture.

PATIENTS AND METHODS:

Forty seven Iraqi circumcised adult males were included in this case descriptive ,comparative study which extended between July 2007-November 2007 was conducted in Department of Dermatology-Baghdad Teaching Hospital. All 47 persons were asked about sociodemographic aspects, medical and skin conditions. They were evaluated clinically regarding different clinical aspects. Statistical data were deduced. Biopsies were done for 8 papillae from 6 persons for histological assessment. Also, 50 circumcised children under the age of 10 years were examined for the presence of these papillae as a control group.

RESULT:

Forty seven males were enrolled the present work, their ages ranged from 14-59(29.72+10.57) years. Twenty five (53.2%) persons had VPP, while 22 (46.8%) subjects showed no papillae. Fifty circumcised children of ages ranged from 3.5-10(5.97+1.42) years, all were lacking the papillae. The papillae were asymptomatic. Shapes of papillae were distributed as follows: skin tag-like papillae were 53.93%, dome-shaped 40.44%, while wartlike in 5.61% of these papillae. Histology was normal apart from finding of dermal encapsulated structures which simulate mechanoreceptor nerve endings, so called Meissner's corpuscles.

CONCLUSION:

All facts start as speculative thoughts as had been proved by the present study. Ventral penile papillae are normal anatomical and physiological structures that are present in only adult males while completely absent in children. So the age of onset lies during adulthood. The location, morphology, age of onset, and the histology of these papillae are very suggestive of their sexual stimulatory function. Still further physiological and histological studies are strongly recommended.

KEYWORDS: ventral penile papillae, human penis, mechanoreceptors, sexual arousal.

INTRODUCTION:

Many normal structures in the human beings might be passed unnoticed by the doctors, and the patients,

if notice them, might seek therapy for them, thinking that they are abnormal.

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Regarding male penis, across the last 30 years of daily clinical practice, one of the authors (Sharquie KE) had seen hundreds of adult male patients attending clinics complaining of wartlike lesions on the distal ventral aspects of their penises. By examining these males, he found that these structures are common penile findings among adult males. Accordingly, he assures of patients that these structures are a normal variant in the penis and need no therapy. In addition, many of these individuals mentioned that rubbing of these structures enhances their sexual excitement.

After careful search through medical literature and

we could not find a mention to these structures, although similar structures have been recorded in animals. So, the aim of the present work is to elucidate the frequency of these structures among normal adult males and, children. In addition to elaborating the different clinical and histological aspects of these normal structures, that we nominated: ventral penile papillae.

PATIENTS AND METHODS:

This case descriptive and comparative study was conducted in the Department of Dermatology and Venereology, Baghdad Teaching Hospital, during July 2007-November 2007. Forty seven Iraqi circumcised adult males, and 50 circumcised male children were chosen from those attending the outpatient clinic, were included in this work. They were questioned for age, address, and marital status, personal history of penile disease or penile skin conditions. Then, they were sought for the presence of the "papillae", the target of the study. These papillae are small, nipple-like papules, on the ventral surface of the shaft of the penis. If they were present, a detailed history and full clinical examination regarding the following points was done: number of lesions, sizes, sites "i.e. on the proximal or distal part of ventral shaft", shape "dome-shaped or skin-tag-like", color "dark skin colored or flesh-colored shiny" and we attempted to record whether it is an asymptomatic or, rather, "annoying" skin lesion.

After ensuring a formal consent of the person and the ethical approval was performed by the scientific committee of the Scientific Council of Dermatology & Venereology-Iraqi Board for Medical Specializations., shave biopsy was performed for 8 papillae from 6 persons under the study for histopathological examination.

Fifty circumcised children under the age of 10 years were examined for the presence of these papillae as a control group.

The papillae and the histological views were imaged by a SONY® Cyber-Shot DSC-W50 6.0 MP digital camera, mainly without using a flash light. Statistical analyses were deduced using EPI6® software.

RESULTS:

This work included 47 Iraqi circumcised adult males and 50 circumcised male children. The ages of the adult group ranged from 14-59 years with a mean±SD of 29.72±10.57years. Twenty five (53.20 %) individuals had papillae while 22(46.80 %) had no such papillae.

Regarding the individuals with papillae, the ages ranged between 14-59 years. Mean+SD=30.68+12.43 years. All were asymptomatic and no one

showed genital viral warts.

The total number of papillae under all their penile shafts was 89 papillae. The number of papillae for each one of them ranged between 1-8 papillae with mean of 3.56±1.85, while the diameter ranged between 1-3mm. with a mean±SD=1.96±0.55mm. These papillae were slightly elevated from skin surface in all individuals (≤ 1mm).

Forty six papillae were skin-colored (51.68 %), 3 white (3.37%), 4 shiny skin colored (4.49 %), and 36 were dark skin-colored (40.44 %). Accordingly, 10 persons (40 %) had dark skin-colored papillae, 12 (48%) with skin colored, 1 (4 %) with white colored papillae, 1 (4 %) with shiny skin colored papillae, and 1 (4 %) with mixed skin colored and dark skin-colored papillae.

Fifty eight papillae (65.16 %) were distributed as crops on distal shaft, 23 (25.84 %) were scattered on the distal shaft, and 8 lateral on each side of distal shaft (in one person) (10.12%). So, 18 persons (72 %) had crops of papillae on distal shaft, 6 (24 %) had scattered papillae on the distal shaft, and 1 (4 %) has lateral papillae on both sides of distal shaft.

Forty eight papillae (53.93 %) were skin-tag like, 36 papillae (40.44%) dome-shaped, and 5 (5.61 %) with wartlike. Regarding persons, 7 (28 %) showed dome-shaped papillae, 12 (48 %) as skin tag-like papillae, 3 (12 %) with mixed dome-shaped and skin tag-like papillae, 2 (8 %) showed mixed skin tag-like and wartlike papillae, while 1(4%) had wartlike papillae.(Figure 1) All these papillae were sessile.

The configurations of the papillae was as follow: some were arranged as crops (which took either a linear pattern or were 3 in number making an equal-sided triangle and one person had bilateral ventrolateral papillae) scattered or as a single papilla. Regarding consistency all papillae were soft. The surface of VPP was either smooth in the dome-shaped papillae, but was slightly corrugated in the wartlike ones. These papillae were not scaly, in the affected individuals.

The histological examination of 8 papillae excised from 6 persons showed normal epidermis and dermis apart from striking strange bodies in the upper dermis. These were rounded structures containing small tubal nucleated bodies (Figure 2). They were located in the upper dermis, sometimes adjacent to dermal papillae and looked encapsulated. This might suggest that they were "mechanoreceptors".

Regarding the individuals without papillae, the ages ranged between 17-47 years with mean±ST =28.63±8.10 years. All were circumcised with no genital warts. On careful examination, they showed no papillae at all.

Regarding the Children group, fifty circumcised children of ages ranged from 3.5-10 years with mean±SD=5.97+1.42 years, all were lacking the papillae.

DISCUSSION:

We noted that in some Iraqi males there are small nipple-like papules on skin of ventral aspect of penile shaft. We assumed that they may be a part of “sexual system”, and they simulate the nipples, structurally and functionally, i.e. mechanical stimulation of them causes sexual arousal or a sort of augmented sexual tactile stimulation. Because they are usually asymptomatic, we assumed that they are a normal variant. However, some patients asked us to remove these papules though we told them they are a normal “benign” variant. Being annoying to some individuals does not make these papules asymptomatic 100%, as some patients thought having viral warts. Yet, they may still a normal variant, as we assume, as much as a “big nose” is (although a big nose may annoy).

The nomenclature:

As these papules are found on the ventral surface of the penile shaft, and as far as they may appear nipple-like, we suggest naming them: *Ventral Penile Papillae* (VPP). In *Dorland’s Illustrated Medical Dictionary*, the word *papilla* means: a small nipple-shaped projection, elevation, or structure.⁽¹⁾ Even the nipple of the breast may be called (*papilla mammae*) according to the *Terminologia Anatomica* (i.e. International Anatomical Terminology).⁽¹⁾ And as we will see below, there are probably similar animal models e.g. cats⁽²⁾, Argentine Lake Duck (*Oxyura vittata*)⁽³⁾ and others.⁽²⁾ These animals’ penises show barbs or “papillae” on their skin.⁽²⁾ (see below, *Animal Models*). This makes the name “papillae” more in favor.

Histology showed (Figure 2) apart from normal skin, rounded amorphous structures, with nuclei inside. These structures are found in the upper dermis, near (but not in) the dermal papillae and they look encapsulated. This may suggest that they are “mechanoreceptors”. Mechanoreceptor is a specialized nerve ending that is responsible for perception of touch and pressure.⁽⁴⁾ The most important one is the Pacinian and Meissner’s corpuscles. Pacinian corpuscles is characterized by the onion-like appearance (and is found in the subcutaneous layer)^(5, 6). Meissner corpuscles are oval-shaped bodies. Each is enveloped by a connective-tissue capsule, and imperfect membranous septa derived from this penetrate the interior. The axis-cylinder passes through the capsule, and after making several spiral turns around

the body of the corpuscle ends in small globular or pyriform enlargements.⁽⁴⁾ These tactile corpuscles occur in the papillae of the dermis of the hand and foot, the front of the forearm, the skin of the lips, the mucous membrane of the tip of the tongue, the palpebral conjunctiva, and the skin of the mammary papilla.⁽⁴⁾ However, some authors mentioned that Meissner’s corpuscles occur exclusively on the ventral aspects of the hands and feet.⁽⁶⁾ To prove that these round encapsulated structures are sort of mechanoreceptors, we need special techniques, like S-100 protein, or at least another “good” silver impregnation. Unfortunately, S-100 is not accessible in Iraq.

Hypothesis of genesis and function of ventral penile papillae

We assumed that these papillae may serve as tactile sexual perceptive parts. To prove this, we may find a rich endowment of them with nerve endings or of pressure receptors (e.g. Meissner’s corpuscles)(see above). The type of nerve endings in the penis vary with location.⁽⁷⁾ The glans penis primarily has free nerve endings that can sense deep pressure and pain.⁽⁷⁾ The transitional area from the external to the internal surface of the prepuce, or ‘ridged band’, has a pleated appearance that is continuous with the frenulum and has a high density of fine-touch neuroreceptors, such as Meissner’s corpuscles.⁽⁷⁾ Based on this histology, the transitional region and the ventral surface of the prepuce would be expected to have lower thresholds for light touch.⁽⁷⁾ One also may prove this by asking men with papillae whether rubbing, messaging or pressing these papillae causes some sexual satisfaction, arousal or stimulation. This was performed by many individuals and felt sexual excitation. The present study showed no significant association of papillae with STIs.

Animal Models

Many species have keratinized epidermal papillae and barbs on the penile shaft and base.⁽²⁾ Papillae are soft, while barbs may be sharp and rigid. Most barbs and papillae are thought to perform a stimulatory role. In primates an increased number of spines correlate with a shortened duration of female sexual receptivity in the ovarian cycle. Penile spines increase stimulation and decrease sperm competition risk.⁽⁸⁾ In felines multiple rows of reverse facing barbs cover the glans.⁽²⁾ These barbs are predominantly stimulatory because feline ovulation is induced by intromission. Barbs in some species act to stabilize the penis in the vagina. This mechanism is highly developed in the Argentine Lake duck, in which penile proximal barbs anchor into the cloaca.⁽³⁾ Porcupines have 2 hook-shaped nails on the ventral

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surface of the penis that likely anchor the penis in the vagina. It is also possible that penile barbs intentionally injure the vaginal mucosa to discourage the female from repeat mating with rival males.⁽²⁾ Chimpanzees and marmosets have penile spines above the corpuscular receptors of the distal penis.⁽⁹⁾ The reason for these anatomic differences is assumed to be the result of evolutionary pressures that maximize copulatory ability.⁽⁹⁾ In conclusions, these papillae are very common in Iraqi circumcised adult males, comprising 53.2% of them. These papillae are mainly skin-colored, or to a lesser degree may be dark skin-colored. These papillae are mainly dome-shaped, and to a lesser

degree skin tag-like. All papillae are distributed at the ventral distal penile shaft, usually in crops, but they may be scattered. Occasionally they may distribute on the lateral aspect of the distal penile shaft. All papillae are asymptomatic. Usually the person is neither aware nor worried about their presence. No significant association with the type of job was detected. All papillae are permanent and had no tendency to resolve over time. The histology of these papillae showed rounded dermal structures which might resemble Meissner's corpuscles as mechanoreceptors functioning as sexual arousal bodies.



A **B**
Figure-1.A Ventral Penile Papillae. B-Closer view .

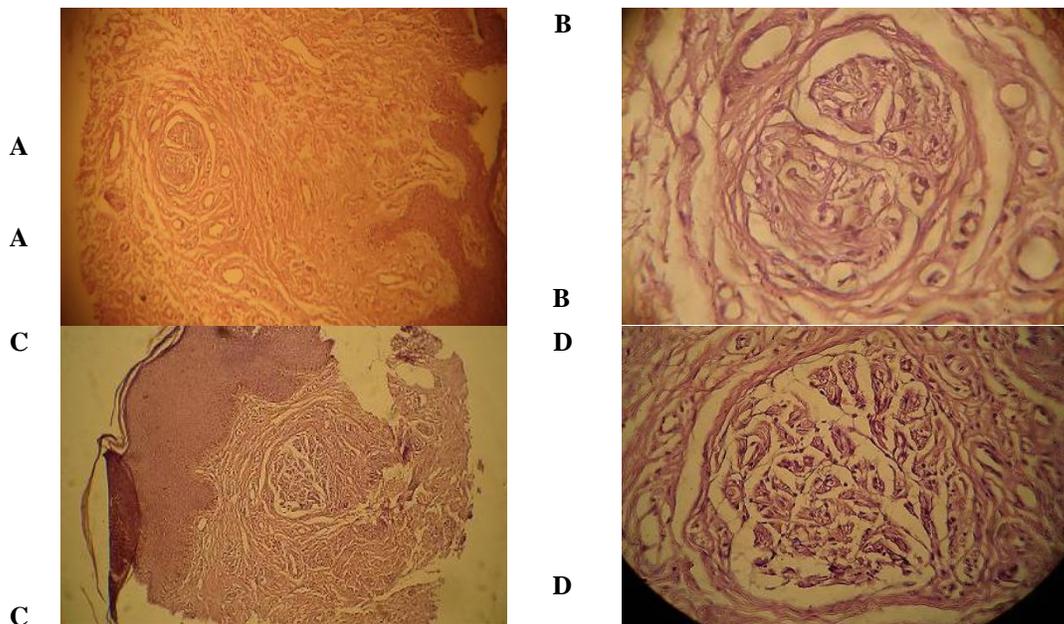


Figure-2 Histological Findings with H & E stain.

- A- Deep dermal encapsulated rounded structure, possibly a mechanoreceptor.
- B- Closer view of A.
- C- Upper dermal encapsulated rounded structure.
- D- Closer view of C.

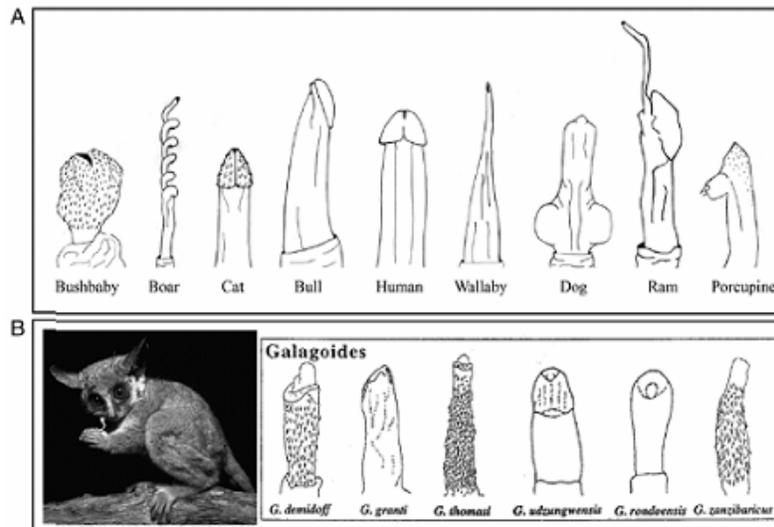


Figure 3: A, penile morphology among different species (not to scale). B, diverse penile morphology in subfamily Galagonidae. Bushbabies in this suborder are similar in somatic appearance, and yet penile morphologies vary dramatically.

N.B. Wallaby An Australasian marsupial (i.e. has a pocket-like pouch like that of kangaroo) similar to but smaller than a kangaroo. Bushbaby a small nocturnal tree-dwelling African primate with very large eyes. Boar also wild boar a tusked wild pig from which domestic pigs are “said to be” descended.

Copied from: Simmons MN and Jones JS. Male Genital morphology and Function: An Evolutionary Perspective, *J Urol* 2007; 177: 1625-1631 Reprinted with permission from Springer Anderson MJ: Penile morphology and classification of bush babies (subfamily Galagoninae). *Int J Primatol* 2000; 21:815.⁽¹⁰⁾

REFERENCES:

1. Anderson DM. *Dorland’s Illustrated Medical Dictionary*. 29th ed., Philadelphia, W.B. Saunders Co., USA; 1998.
2. Simmons MN and Jones JS. Male Genital Morphology and Function: An Evolutionary Perspective, *J Urol* 2007; 177,1625-1631.
3. McCracken KG. The 20-cm spiny penis of the Argentine Lake Duck (*Oxyura vittata*). *Auk* 2000; 117,820.
4. Williams PL, Warwick R, Dyson M, Bannister LH. *Gray’s Anatomy*, 37th ed. New York, Churchill Livingstone, 1989.
5. Archer CB, Functions of the Skin, In: Burns T; Breathnach S; Cox N, *Rook’s Textbook of Dermatology*, 7th ed., London, Blackwell Science, 2004; 4, 4.10.
6. Murphy GF, *Histology of the Skin*, In: Elder DE, Elenitsas R, Johnson BL, Murphy GF, *Lever’s Histopathology of the Skin*, 9th ed. Pennsylvania, Lippincott Williams & Wilkins, 2005; 3, 41-42.
7. Sorrells ML, Snyder JL, Reiss MD, Eden C, Milos MF, Wilcox N and Van Howe RS. Fine-touch pressure thresholds in the adult penis. *BUJ International* 2007, 864-69.
8. Stockley P: Sperm competition risk and male genital anatomy: Comparative evidence for reduced duration of female sexual receptivity in primates with penile spines. *Evol Ecol* 2002; 16,123.
9. Cold CJ, Hubbard GB, Tarara RP and Stribling LJ. Comparative Anatomy of the Specialized Sensory Receptors of the Primate Penis and Prepuce: Humans, Chimpanzees, Baboons, Rhesus Monkeys, and Marmosets. *The Apes: Challenges for the 21st Century. Posters and Abstracts* Anderson MJ: Penile morphology and classification of bush babies (subfamily Galagoninae). *Int J Primatol* 2000; 21, 815.