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CASE REPORT

Giant Prostatic Hyperplasia

Fourth largest prostate reported in medical literature

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تضخم بروستات عملاق

رابع أكبر بروستات سجل في الأدب الطبي

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ABSTRACT: A giant prostatic hyperplasia (GPH) weighing more than 700 g is a rare entity. It is believed that only eight such cases have been previously reported in the medical literature. This case report concerns a patient with a GPH weighing 740 g which was successfully removed by suprapubic prostatectomy. To our knowledge, this is the fourth largest benign prostatic enlargement ever reported in the literature.

Keywords: Benign Prostatic Hyperplasia; Prostatectomy, Suprapubic; Case Report; Oman.

الملخص: تضخم البروستات العملاق ليزن أكثر من 700 غرام يمثل حاله نادرة للغاية. ويعتقد بأنه تم تسجيل ثمانية حالات مماثلة فقط في الأدب الطبي. هذا التقرير يستعرض حالة مريض تم تحويله إلى قسم جراحة المسالك البولية في مستشفى صحار في سلطنة عمان عنده ضخامة بروستات عملاق يزن 740 غرام استؤصل بنجاح عن طريق شق فوق العانة. على حد علمنا هذا رابع أكبر تضخم حميد للبروستات سجل في الأدب الطبي

مفتاح الكلمات: تضخم البروستات الحميد؛ استئصال بروستات فوق العانة؛ تقرير حالة؛ عمان.

Benign prostatic hyperplasia (BPH) in males is commonly associated with the ageing process. As a man ages, the enlarged prostate usually produces progressive lower urinary tract symptoms. In some people, the prostate enlarges massively, eventually weighing more than 500 g; this is defined as giant prostatic hyperplasia (GPH).[1] Researchers have not identified to date any specific cause for this massive enlargement of the prostate.[2] The case under discussion is a patient whose only symptom was frequent urination yet who had a massive prostate enlargement (740 g). The prostate's large size and the relative lack of symptoms in the patient further underline the fact that symptoms do not necessarily correlate with the size of the prostate.

Case Report

An 89-year-old man of medium stature, weighing 65 Kg and with a height of 162 cm attended the Urology Clinic at Sohar Hospital, Oman, with a long history of frequent day and night urination that had worsened during the previous three months. He claimed that his urinary stream was satisfactory. A clinical examination revealed a non-tender dull mass in the suprapubic area. On digital rectal examination, the anal tone was found to be normal, but the prostate was very large with a rubbery consistency and no palpable hard nodules. The upper border of the prostate could not be reached.

An ultrasound scan revealed a huge prostatic enlargement bulging into the bladder. Renal function tests and urine investigations were within normal range. The patient's preoperative haemoglobin level was 13 g/dL. His prostate specific antigen (PSA) level was 85.7 ng/mL. A computed tomography (CT) scan revealed normal kidneys but a prostate which was abnormally large in size, measuring 14 x 13 x 9 cm and occupying the whole bladder [Figure 1]. In view of the patient's severe urinary frequency, catheterisation was carried out. The catheter went in easily but drained only 100 mL of clear urine and the suprapubic mass persisted after catheterisation.

After the detailed examination and investigations, the patient underwent a suprapubic prostatectomy. The surgical procedure revealed a massively enlarged prostate with a median lobe occupying the entire bladder, with large dilated and tortuous veins over it [Figure 2]. The enlarged gland was enucleated completely in the classical transvesical method. The enucleation caused excessive bleeding from the prostatic bed due to the large size and increased

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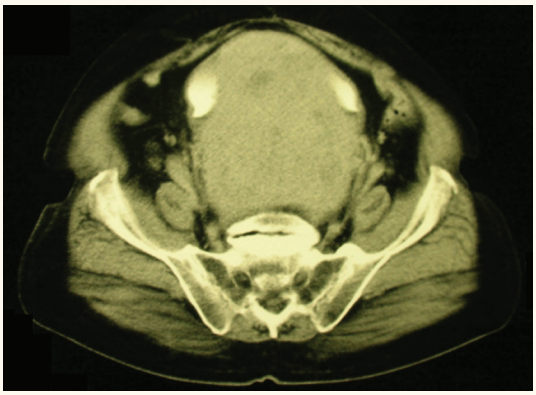

Figure 1: Computed tomography scan showing the huge prostate filling the bladder.

vasularity of the gland and the patient became haemodynamically unstable with hypotension and tachycardia, which was managed by blood transfusion and fluid replacement. The estimated blood loss was about 1,800 mL and three units of blood were transfused during surgery. When routine methods failed to control the bleeding, the technique of purse-string partition closure of the bladder neck, described by Malament in 1965, was applied.[3] The bladder neck was closed with a number one Prolene purse-string suture after inserting a 24FR Foley catheter via the urethra into the bladder. The ends of the suture were brought outside the abdominal wall and tied. The bladder was closed in layers after the insertion of a 22FR Foley catheter as a suprapubic catheter. The patient's postoperative haemoglobin was 11.8 g/dL. No significant bleeding occurred in the postoperative period.

The urine was clear from the first postoperative day. The Prolene suture was removed after 48 hours and no bleeding was encountered. The urethral catheter was removed after seven days with clamping of the suprapubic catheter and the patient could pass urine with a good stream. The suprapubic catheter was removed on the ninth postoperative day and the patient was discharged the next day. At the two-month follow-up visit, the patient was voiding satisfactorily and was continent.

The excised specimen was submitted for histopathological examination. The specimen measured 14 x 13 cm and weighed 740 g [Figure 3]. On gross examination, there was no evidence of induration or necrosis. A microscopic examination revealed glandular and fibromuscular stromal proliferation in varying proportions [Figure 4]. Findings were compatible with BPH. There was no evidence of prostatitis or carcinoma.

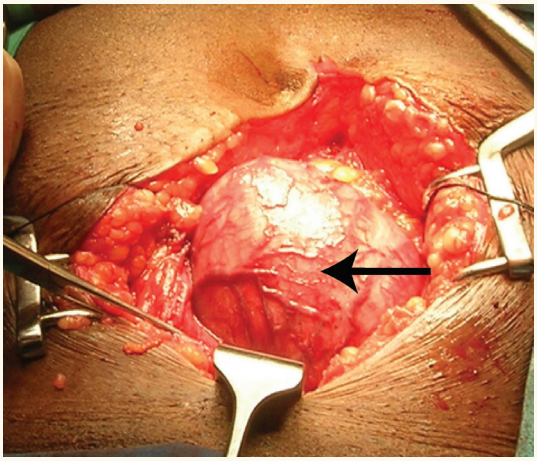

Figure 2: The median lobe of the prostate after opening the bladder, with dilated veins over it (arrow).

Discussion

BPH is a common disorder of the prostate affecting most males above the age of 40 years. Prostatic hyperplasia is considered to be due to the proliferation of epithelial and stromal cells, impairment of programmed cell death (apoptosis) or both and is endocrine controlled.[4] Autopsy data indicate that over 90% of men older than 80 years have histological evidence of BPH.[5] Prostates weighing more than 100 g have been recorded in only 4% of men above the age of 70 years.[5] BPH with the prostate weighing more than 500 g is rarely seen and is defined as GPH.[1] Only eight cases of BPH where the prostate weighed more than 700 g have been reported in the literature to date [Table 1].

The genesis of GPH is not known; however, an exaggerated over-expression of growth factors combined with the absence or reduction of inhibitory

Figure 3: The removed prostatic specimen weighed 740 g.

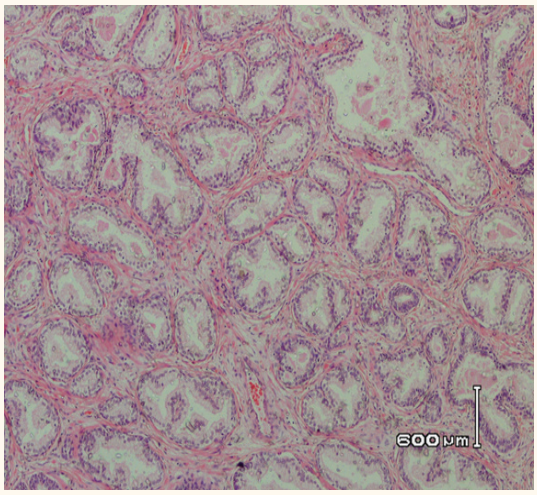

Figure 4: Microscopic examination of the prostatic specimen.

factors have been proposed as possible mechanisms.[6] The mutation of certain proto-oncogenes such as *Ras* and *c-erbB-2* may also be involved, developing a continuous cellular proliferation signal or the loss of influence of the *p*53 suppressor gene through its mutation or deletion, which would allow for abnormal cell proliferation.[6]

Transurethral surgical techniques or other minimally invasive procedures are performed for patients with small- to medium-sized prostates. However open surgery is recommended for bigger prostates. Most surgeons prefer suprapubic prostatectomy. Rapid removal of the enlarged gland with immediate effective haemostatic techniques is essential to decrease blood loss. The measures suggested to stop bleeding include applying pressure in the prostatic fossa with gauze pads; applying one or two plicating sutures to reduce both the bleeding and the prostatic fossa volume;[7] suturing of the bladder neck at the 5 and 7 o'clock positions;[8] taping both internal iliac arteries before surgery; ligation during surgery if bleeding is excessive;[9] compressing the bladder neck with a catheter balloon to control re-bleeding,[10] and a purse-string partition closure.[3]

Of the eight patients in whom the prostate weighed more than 700 g, three died as a consequence of haemorrhage.[11] The application of a purse-string partition closure of the bladder neck gave an excellent result in our patient; other measures used in this case, like packing, plication of the prostatic fossa and suturing of the bladder neck, could not stop the bleeding. The authors recommend purse-string partition closure of the bladder neck as the first step to stop the bleeding during the surgical enucleation of massively enlarged prostates in order to avoid a potentially fatal excessive blood loss.

Table 1: Giant prostates exceeding 700 g in medical literature

Author	Weight in g	Result
1. Medina-Peres *et al.*[12]	2,410	Survival not mentioned
2. Tolley DA *et al.*[13]	1,058	Recovered
3. Ockerblad[14]	820	Died
4. Current case	740	Recovered
5. Ucer *et al.*[15]	734	Recovered
6. Nelson[16]	720	Died
7. Gilbert[17]	713	Died
8. Wadstein[8]	705	Recovered
9. Lantzius-Beninga[18]	705	Recovered

Conclusion

The case report presented here constitutes the fourth heaviest prostate reported in medical literature to date. More importantly, in certain cases surgical treatment of GPH ended fatally due to the after-effects of haemorrhage. In order to tackle the risk of haemorrhage effectively, the authors recommend the technique of purse-string partition closure of the bladder neck to stop bleeding in large and vascular prostates. This technique was applied effectively in this case and yielded an excellent result for the patient.

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