Case Report

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Squamous Cell Carcinoma Arising from Remnant of Mullerian Duct With 47XYY Karyotype – Rare Case

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Abstract

Persistent Mullerian duct syndrome (PMDS) is a rare type of male pseudohermaphroditism characterized by the presence of Mullerian derivatives (uterus, fallopian tubes and upper vagina), cryptorchidism either unilateral or bilateral along with inguinal hernia in a phenotypically and genotypically male person. PMDS is rarely associated with malignancies, the most common being testicular germ cell tumours. Occasional case of Adenocarcinoma arising in the PMD remnant structure is reported.

We report an unusual case of male type of PMDS with squamous cell carcinoma (SCC) arising from PMD derivatives and presented with hematuria Also, this patient had karyotype of 47XYY (Jacob syndrome). Both these are hitherto unreported in English literature to the best of our knowledge.

***Keywords**: Jacob syndrome, Persistent Mullerian duct syndrome, Squamous cell carcinoma, cryptorchidism*

Introduction

Persistent Mullerian duct syndrome (PMDS) is an unusual disorder in males, characterized by cryptorchidism either unilateral or bilateral, along with inguinal hernia and retention of Mullerian derivatives (uterus, fallopian tubes and upper vagina). [1] Less than 200 cases are reported in English literature.[2] The cause for persistence of the Mullerian duct remnants is presumed to be a deficiency of anti-Mullerian hormone (AMH) or a defect in the AMH receptor.[1] Two anatomic form of PMDS are described.[3] Male form (80-90%) where one testis is descended into scrotal sac and ipsilateral uterus and fallopian tube are generally in the inguinal canal. The female type (10-20%) is characterized by bilateral cryptorchidism where the testis is embedded in the broad ligament in an ovarian position of uterus which is situated in the pelvis. PMDS is associated with the risk of malignancies especially the germ cell tumors of testis either seminoma/ mixed germ cell tumors.[2] However the PMD remnants also have malignant potential as described in the occasional case reports.[3]

Our patient had a squamous cell carcinoma (SCC) arising from PMD remnants which was infiltrating the posterior bladder wall and patient presented with hematuria. This has not been reported till date in English literature.

Case History

year-old man presented with history of hematuria and pain in phallus since 2 months.On physical examination Secondary sexual characters such as pubic hair and facial hair well developed. Left testis was palpable in the scrotum and right testis not palpable. There was a lump in the right inguinal region and history of infertility.His Serum FSH- 5.55 mIU/ml, LH- 8.11 mIU/ml, Testosterone- 4.73 ng/ml, Dehydroepiandrosterone-1.84 ng/ml, Anti-Mullerian hormone 2.93ng/ml (All within normal range). His karyotype was 47XYY(Jacob syndrome).fig 1.

MRI showed left testis within left scrotal sac. Right scrotal sac was empty . An ovoid heterogenous signal intensity structure measuring 2.5x0.6 cm is seen in the region of the deep inguinal ring, likely suggestive of an atrophic undescended right testis. The urethra in corpus spongiosum is seen opening along the inferior aspect of the penis, near the root of scrotum, consistent with peno-scrotal hypospadias. No uterus/ ovaries were seen.

A transversely oriented fluid filled structure is seen posterior to the urinary bladder wall and proximal urethra, resembling- vagina. From antero-superior part of the vaginal vault, a large irregular infiltrative, heterogeneously enhancing mass measuring 4.4x4.3x5.7 cm seen extending anteriorly and infiltrating the posterior wall of the urinary bladder was seen. "features suggestive of tumor arising from persistent Mullerian duct". He underwent Radical Cystectomy and excision of right inguinal mass. We received a cystectomy specimen with sac like structure

posterior to bladder (fig 2) along with specimen labelled as right inguinal mass (Undescended testis). fig 6

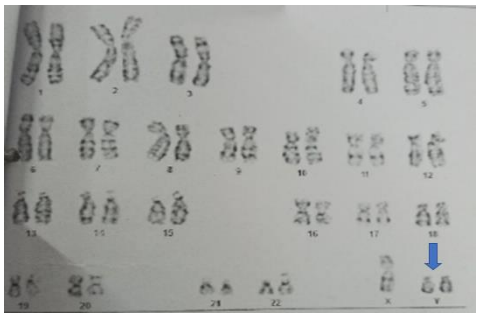

Figure 1: Shows 47 XYY Karyotype Suggestive of Jacob syndrome

Figure 2: shows a sac like structure posterior to bladder measuring 4x1x1 cm. A grey white tumour seen arising from it (blue arrow) and infiltrating the posterior wall of bladder (red arrow)

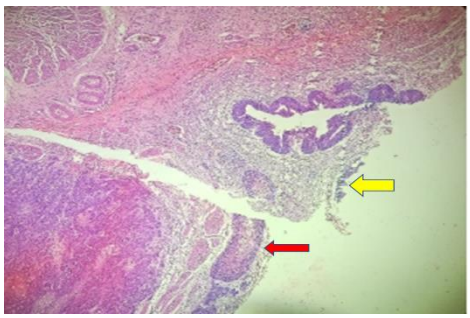

Figure 3: Shows normal urothelial lining (yellow arrow) and adjacent to it tumour infiltrating bladder muscle (red arrow)

Discussion

Less than 200 cases of PMDS are reported in English literature. [2] In male form one testis is descended into scrotal sac, uterus and ipsilateral fallopian tubes are generally present in the inguinal canal. The female type is characterized by bilateral cryptorchidism where the testis are embedded in the broad ligament in an ovarian position of uterus, which is situated in the pelvis. In our patient, testis was seen in scrotal sac in left side. Right scrotal sac was empty and there was an inguinal hernia which showed structure of uterus, fallopian tube. No testicular parenchyma was seen. So, this was an unusual presentation of male type of PMDS.

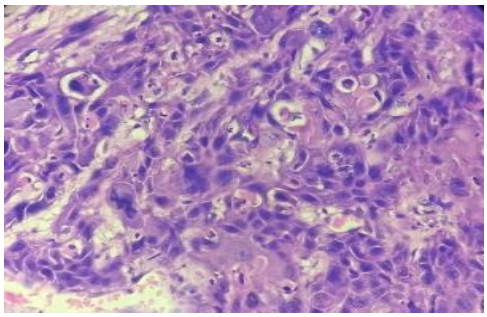

Figure 4: shows round to oval pleomorphic squamous epithelial cells with increased nuclear to cytoplasmic ratio, hyperchromatic nucleus, dyskeratosis and atypical mitotic figure. Feature suggesting of SCC

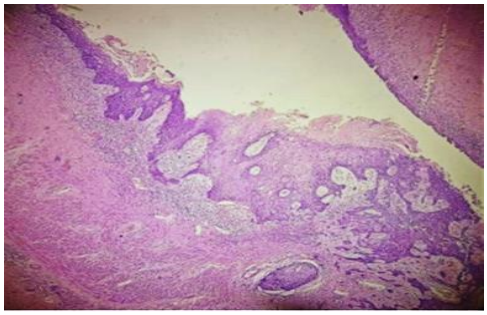

Figure 5: shows stratified squamous lining of the sac and tumour arising from it which shows round to oval pleomorphic squamous epithelial cells with increased nuclear to cytoplasmic ratio, hyperchromatic nucleus feature suggesting SCC

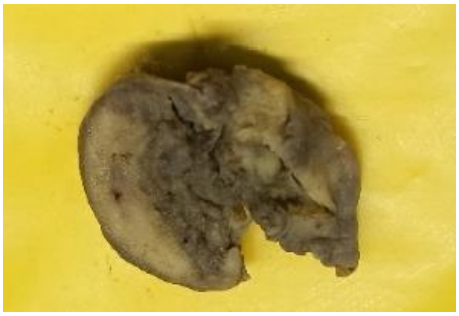

Figure 6: shows received tissue labelled as right undescended testis showing grey, brown tissue bit measuring 3 x1.5 x 1.5 cm.

Our patient presented with hematuria and pain in phallus. He was married at the age of 20 years.There was history of infertility. On examination, secondary sexual characters was well developed. He had left testis in scrotal sac. Penoscrotal hypospadias was present. Infertility is common presenting feature in PMDS with azoospermia.[2] However few patients had children. [3] PMDS does not affect the development of secondary sexual characters.So this condition is diagnosed during or assessment of infertility or treatment of inguinal hernia or cryptorchidism.[3]

The etiology of PMDS is thought to be deficiency of either AMH/ AMH Receptors.[2]

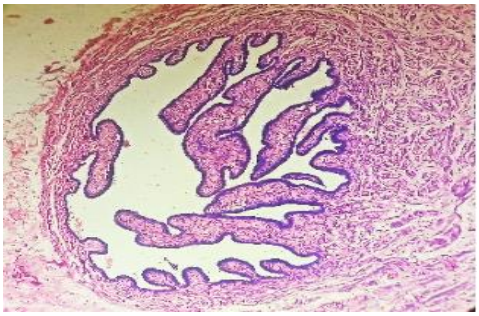

Figure 7: Section from tissue yielded microscopic structure of Fallopian tube

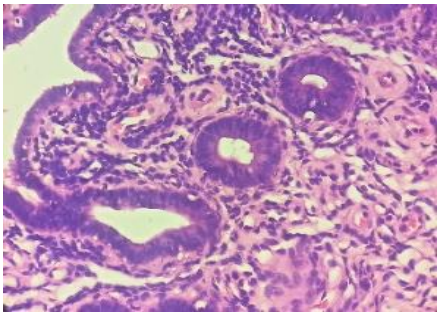

Figure 8: Endometrial glands and stroma

The karyotype of this patient was 47XYY. Many males with this karyotype are taller than average, sometimes it does not cause any unusual physical features. Our patient did not have any psychomotor/ neurological/ behavioral/ social / emotional problems which are sometimes associated with this karyotype. (also called as Jacob syndrome) Association with this karyotype has not been reported in cases of PMDS.[4] This was also a rare association.

Around 40 cases of PMDS associated with malignancies are reported in literature. Out of these 37 were testicular malignancies. Seminoma are the most common followed by mixed germ cell tumour.[3] Shinmura et al reported a case of clear cell adenocarcinoma arising from the Mullerian duct.[5] Mitre et al reported a case of carcinoma- prostate in PMDS.[4] Frederico et al reported adenocarcinoma arising from PMD remnants. It was arising from lower portion of uterus. [3]

SCC arising in the PMD structure is not hitherto reported in English literature to the best of our knowledge. Our patient had a Sac like structure posterior to bladder wall measuring 4x1x1cm with squamous lining and SCC was seen arising from it probably.Immunohistochemistry with P16 was negative thus excluding HPV associated SCC. Urinary bladder was extensively studied and the urothelial lining did not show any squamous metaplasia or dysplasia.Tumour was infiltrating the detrusor muscle in posterior wall of bladder, leading to hematuria.

Conclusion

The PMD structures do seem to have malignant potential. So, in cases of PMDS, regular follow up, radiological surveillance and preventive surgical measures are important for prevention / early detection and treatment of these tumors

Reference

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