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Testicular Preservation for A Testicular Tumorand The Value of Frozen Section

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1. Abstract

1.1. Background

Testicular tumors are relatively rare in children and the majority are considered malignant. As a result of this, these tumors are treated by radical orchidectomy. This however is not the case always and sometimes testicular sparing surgery is possible where clinical, ultrasound and frozen section are supportive in this regard. We report a case of testicular sparing surgery outlining aspects of clinical features, diagnosis and management.

1.2. Case Report

A 14-year-old male, a known case of morbid obesity and gynecomastia presented to the clinic with right scrotal swelling which was discovered two weeks prior to presentation. Clinically, he was found to have a firm and non-tender right testicular mass. Scrotal ultrasound showed the right testis was enlarged measuring 33X18 mm. There was a heterogenous intratesticular mass measuring 18X14X19 mm. Tumoral markers (alpha-fetoprotein, beta-human gonadotropin chorionic) were normal. He was operated on through an inguinal approach. A biopsy was taken and sent for frozen section.The Frozen section pathology reported this to be a benign tumour highly suggestive of a dermoid cyst. Complete resection of the tumour was done and the histopathology confirmed it to be a dermoid cyst.

1.3. Conclusions

Clinically, it is difficult to differentiate between benign and malignant testicular tumours in children. Testicular US, clinical and tumoral markers can be helpful in the decision between orchidectomy or testis sparing surgery for these tumors. Sometimes intraoperative frozen section biopsy may be a determinant factor in the choice of the appropriate surgical procedure. This is specially so if the ultrasound is not conclusive.

2. Introduction

Testicular tumors are considered relatively rare in children. They account for 2–4% of all cancers seen in children [1,2,3]. There is an associated increased risk of testicular tumors in children with cryptorchidism and gonadal dysgenesis [3,4,5,6]. Mature testicular teratoma is the most frequent tumor (83%) seen in children with known intraabdominal testes while seminoma is the most frequent malignant tumor known to be associated with cryptorchidism [1,2,7]. Gonadal dysgenesis on the other hand has a high risk to develop testicular tumors. The risk is estimated between 35–50%, thus these patients require prophylactic gonadectomy. Gonadoblastoma occurs exclusively in patients with gonadal dysgenesis and seminoma is the most frequent malignant tumor in it [8,9, 10].Benign testicular tumors are most commonly seen in younger boys while malignant tumors are seen commonly after puberty and there is a rise in the incidence of testicular tumors after the age of 9 years. This is attributed to the high hormone levels at puberty and as a result of this, the malignant potential of germinal cell tumors increases rapidly after this age [3,4].Clinically, it is not possible to differentiate between benign and malignant testicular tumors and in many cases orchidectomy was the treatment of choice in any patient who present with a testicular mass. This was to avoid the possibility of missing a malignant testicular tumor which are known to spread and metastasize early. Abnormal tumor

markers can hint to the possibility of a malignant testicular tumors if these were found to be elevated. Ultrasound in experienced hand is very useful to differentiate between benign and malignant testicular tumors but this is known to be an operator dependent and sometimes it is confusing when it comes to decision making. We report a case of a child who presented with a testicular swelling stressing the values of intraoperative frozen section and testicular preservation.

3. Case Report

A 14-year-old male, a known case of morbid obesity and gynecomastia presented to the clinic with right scrotal swelling which was discovered two weeks prior to presentation. He had a history of morbid obesity and his weight was 120 kg but he managed to lose up to 40 kg with diet and exercise. Clinically, he was found to have a firm and not tender right testicular mass. The left testis was normal and his genitalia was normal. Scrotal ultrasound showed the right testis was enlarged measuring 33X18 mm. There was a heterogenous intratesticular mass measuring 18X14X19 mm (Figure 1). He was investigated and his blood tests were reported to be normal apart from a slightly low free testosterone level compared to the reference range. Tumoral markers (alpha-fetoprotein, beta-human gonadotropin chorionic) were normal. CT scan of the abdomen and chest was normal. The case was discussed with the pediatric oncologist and the decision was to do exploration with orchidectomy for the high possibility of right testicular tumor.We decided to do exploration of the right testis and do frozen section. This was done through an inguinal approach and after controlling the spermatic cord, a small incision was made above the testicular tumour and piece of the tumour was removed and sent for frozen section. The tumour itself looked benign and resembling a dermoid cyst. The Frozen section pathology reported this to be a benign tumour highly suggestive of a dermoid cyst. Complete resection of the tumour was done with few millimetres of adjacent healthy tissue and the capsule of the testis was closed with interrupted vicryl sutures (Figures 2 and 3). Postoperatively he did well and was discharged home on the second postoperative day. The histopathology of the resected mass showed a cyst lined by stratified squamous epithelium and contains keratin consistent with a benign epidermoid cyst. There was no evidence of any malignancy. The adjacent part of testicular tissue appeared normal (Figures 4a, 4b, 4c and 4d).

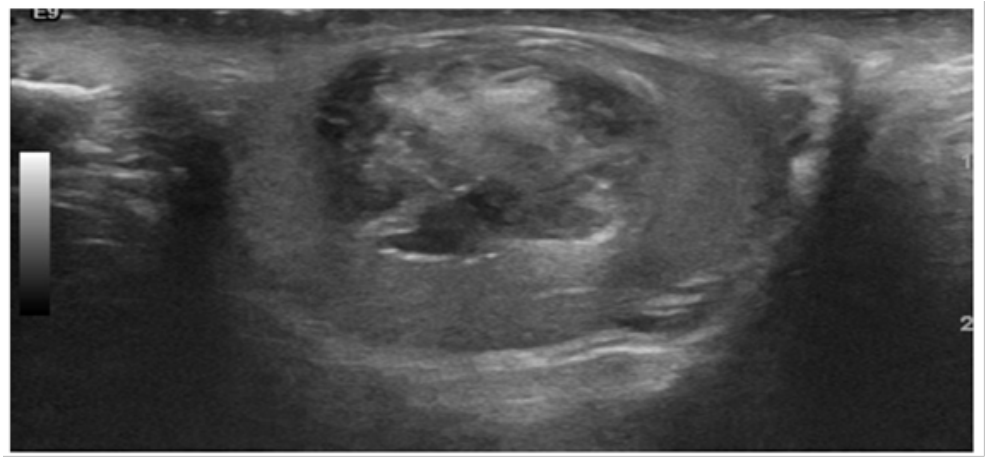

Figure 1: A preoperative ultrasound of the right testis showing enlarged right testis measuring 33 x 18 mm. There is a right sided inhomogeneous intratesticular mass measuring 18 x 14 x 19 mm.

Figure 2: Intraoperative photograph showing the testis open after excision of the tumor.

Figure 3: Intraoperative photograph showing the testis sutured after excision of the testicular tumor.

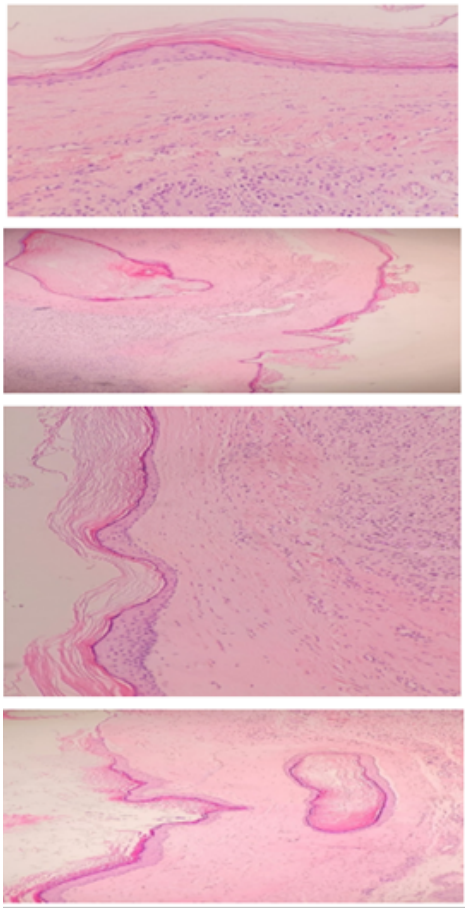

Figure 4a, 4b, 4c and 4d: Histopathology sections of the right testicular tumor showing unilocular cyst containing clear fluid. The cyst wall is lined by stratified squamous epithelium and contains keratin consistent with a benign epidermoid cyst. There is no evidence of any malignancy. The adjacent part of testis appears unremarkable. There is no evidence of any malignancy.

4. Discussion

Testicular tumors are relatively rare in children and commonly they present with a painless scrotal mass. The diagnosis of testicular tumors in children is based on the clinical finding of a painless scrotal maas. The issue is whether this is benign or malignant. This is important when planning surgery and whether testicular preservation is feasible or not. The diagnosis of testicular tumors is supported with tumoral markers including alpha-fetoprotein, beta-human gonadotropin chorionic and testosterone hormone levels. Ultrasound is the best imaging modality to evaluate testicular tumors and in good hands it can differentiate benign from malignant tumors[5,9]. It is a simple, noninvasive investigation but it is operator dependent. Benign testicular tumors are characterized by the presence of a well-defined cystic lesion and normal or increased echogenicity when compared to the healthy testicular parenchyma. Ultrasound is the first imaging technique to study testicular masses, with a sensitivity of almost 100% but with low specificity because the differentiation between benign and malignant neoplasms is difficult in most cases [11,12,13]. Testicular tumors are predominantly homogeneous hypoechoic, but can also be heterogeneous with solid, cystic or calcific components that reflect the underlying histologic characteristics [2,3, 11,12,13]. Malignant testicular tumors on the other hand will appear as inhomogeneous, hypoechoic, not well-circumscribed or diffused infiltrative lesion on ultrasound.Benign tumors are more frequent in prepuberal boys and malignant tumors in pubertal boys. Teratoma is the most common histologic type.When a testicular tumor is suspected, chest computerized tomography and abdominopelvic computerized tomography or magnetic resonance are necessary to exclude metastatic spread of the tumor in those with suspected malignant testicular tumors.Testicular preservation surgery is the treatment of choice in benign testicular tumors and radical inguinal orchidectomy is the treatment for malignant testicular tumors[10-20]. Although these are the recommendations but sometimes it is very difficult preoperatively to distinguish benign from malignant testicular tumors and a decision has to be taken intraoperatively.After being clinically suspected and once the ultrasonographic examination confirms an intratesticular lesion, the determination of serum markers (AFP, B-HCG), hormonal levels (testosterone) and LDH are necessary to guide the diagnosis and the treatment. It should be taken into account that infants under 12 months of age can have high AFP levels physiologically. Percutaneous testicular biopsy is not usually performed because of the risk of lymphatic seeding in malignant testicular tumors. Testicular sparing surgery should be used in children with a testicular tumor in which the normal testicular tissue seems salvageable on ultrasound and with normal tumoral markers. Intraoperative frozen section examination can be applied to confirm pathological tumor as well as to justify conservative surgery [21]. Our patient had a testicular tumor with normal hormone levels and

unfortunately ultrasound was not pepful when it came to decision making. We found intraoperative frozen section was useful and because of this it was possible to salvage his testis.In conclusions, testicular tumors are rare in children and every attempt should be made to preserve the testis. This will necessitates differentiating benign from malignant tumors. This can be done preoperatively depending on clinical evaluation, tumor markers and ultrasound. In those patients where tumor markers are normal and ultrasound in not conclusive, we advocate intraoperative frozen section and once frozen section confirms a benign nature of the tumor then a testicular preservation surgery should be done otherwise radical orchidectomy is the treatment of choice.

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