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Case Series

Testicular and Paratesticular Neoplasms in Pediatrics: Report of 5 Cases with Atypical Presentation and Literature Review

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Abstract

This study presents 5 atypical cases of testicular and paratesticular neoplasms in pediatrics, highlighting the importance of a high level of clinical suspicion and accurate diagnostic approach. Although rare, these neoplasms can present a variety of clinical and histological manifestations, complicating their diagnosis. Early recognition and proper classification are crucial to ensure effective treatment and a favorable prognosis. Multidisciplinary collaboration, including oncology, pediatric surgery, and endocrinology, is essential to address the oncological and developmental needs of patients. The study concludes that rigorous clinical vigilance and a multidisciplinary approach are fundamental in addressing these challenges in pediatric care for patients with testicular and paratesticular neoplasms.

Keywords: *Tumors - Testicular - Oncology - Pediatrics - Testes - Testicular Neoplasm - Tumor - Pediatrics.*

Introduction

Testicular and paratesticular neoplasms account for 1-2% of solid tumors in childhood. The age of onset for these tumors is bimodal. The first peak occurs between the ages of 2 and 4 years, after which the frequency progressively declines until age 15, then rises again, reaching its maximum peak in young adults.

It is estimated that 60% of tumors in this category are benign, with the most common being mature teratomas. Among malignant testicular tumors, the most frequent ones are yolk sac tumors and choriocarcinomas.

Most are diagnosed in early stages, with a rate of radical orchiectomies exceeding 75%. There is no difference in prognosis or mortality regardless of histology, which hovers around 90%.

The most common presentation is the emergence of a palpable, painless testicular mass.

We present 4 cases operated on in our institution of testicular and paratesticular tumors with uncommon histopathologies and atypical presentation forms. [1-8]

Methodology

Retrospective, Case series, Review of medical records.

Literature search

Journal of Pediatric Surgery, PUBMED.

Clinical Cases

Case 1: Deep Lymphangioma.

Clinical Presentation: 5 years old, with no significant medical history, presented with an increase in size of the left testicle secondary to trauma.

Complementary Studies: Ultrasound: Heterogeneous parenchyma with punctate calcifications. Well-defined borders. Dimensions: 16 x 11 x 9 mm (TD) and 16 x 9 x 10 mm (TI). Displaced towards the distal third of the inguinal canal due to the presence of a fluctuating, particle-like mass measuring 41 x 29 mm, vascularized, with a septated hydrocele. Tumor markers were normal.

Presumptive Diagnosis: Hematoma secondary to testicular trauma.

Intraoperative Findings: Lobulated, heterogeneous, hard-elastic paratesticular mass with normal testicular characteristics. Orchiectomy and mass excision were performed.

Pathological Anatomy: Testicular neoformation composed of vascular and/or lymphatic structures with thin and thick walls. No thrombosis or lymphoid aggregates observed.

Diagnosis: DEEP LYMPHANGIOMA.

Follow-up: Managed by hematology-oncology. No further treatment required. Surgical discharge.

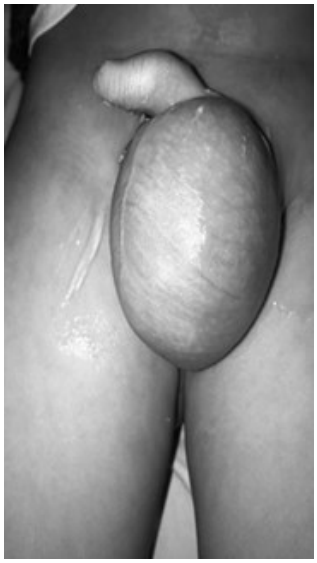

Fig 1: *Initial presentation.*

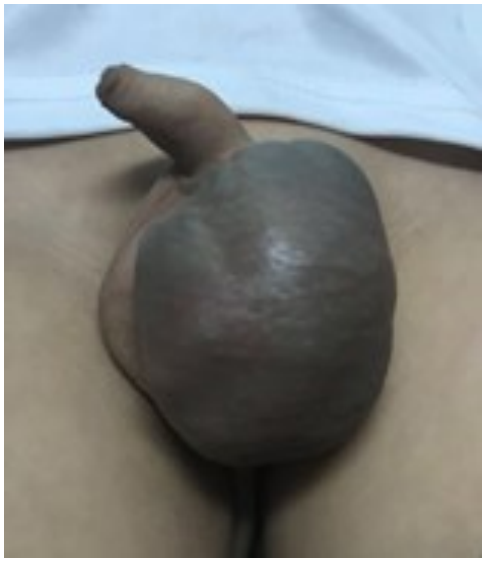

Fig 2: *Evolution of the "hematoma".*

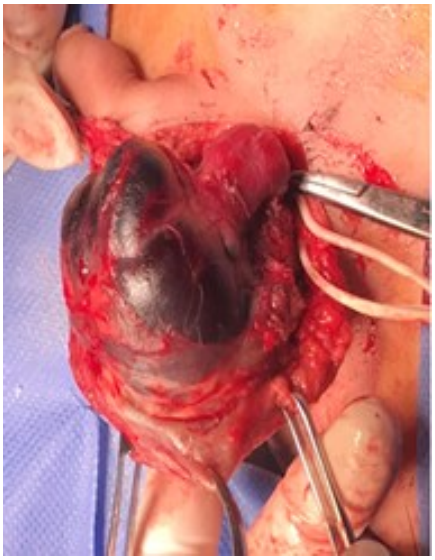

Fig 3: Operative findings.

Case 2: Paratesticular Ganglioneuroma.

Clinical Presentation: Acute inguinal pain, 24 hours of evolution.

Complementary Studies: Ultrasound (FIGURE 5).

Presumptive Diagnosis: Cryptorchid testicle with torsion.

Intraoperative Findings: Paratesticular mass. Total orchiectomy was performed.

Pathological Anatomy: Paratesticular ganglioneuroma.

Follow-up: Managed by hematology-oncology. Discharged from both services.

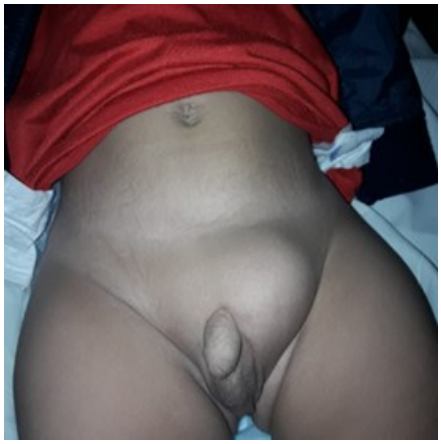

Fig 4: *Initial presentation.*

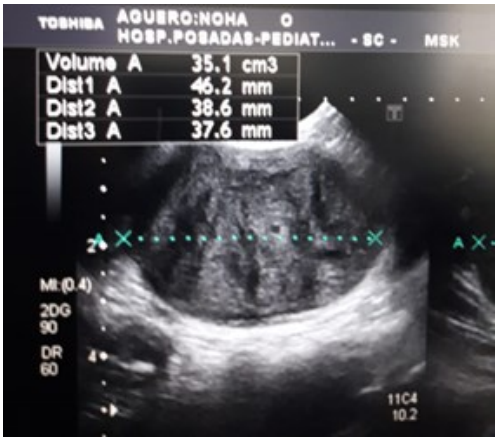

Fig 5: *Ultrasound.*

Case 3: Mixed Tumor.

Clinical Presentation: 13-year-old patient presenting with intermittent right testicular pain for 2 weeks, with increased size over the last 72 hours, associated with food vomiting, and a left supraclavicular mass. Notable weight loss, asthenia, and adynamia. Medical history includes hypertension and obesity. Physical exam revealed a firm-elastic mass occupying the right testicular region, with no color changes, adherent to deep planes, and no signs of inflammation.

Complementary Studies

Tumor Markers: Alpha-fetoprotein (AlfaFP) 3197 (normal range 0-11), CA125 24 (normal value 0-35), BHCG 17419.

Testicular Ultrasound: Microcalcifications noted; right testicular mass measuring 38 x 13 x 21 mm (5.7 ml) with heterogeneous appearance, multiple rounded cystic Figures, and moderate vascularization, measuring 87 x 66 x 65 mm (volume 200 ml).

Supraclavicular Ultrasound: Heterogeneous vascularized oval Figure measuring 45 x 36 x 48 mm.

CT Scan: Left supraclavicular area revealed a conglomerate of lymphadenopathy measuring 78 x 52 mm, displacing the trachea to the right. In the thorax, abdomen, and pelvis: a nodular Figure observed in the upper segment of the left lower lobe measuring 4.4 x 5.8 mm and mediastinal adenomegalies. Bilateral gynecomastia noted.

Signs of ureteropelvic hydronephrosis of the right kidney due to a conglomerate retroperitoneal lymphadenopathy extending more towards the right (measuring 62 x 83 x 148 mm).

Presumptive Diagnosis: Testicular tumor.

Intraoperative Findings: Large, firm-elastic testicular mass.

Follow-up: Managed by hematology-oncology.

Fig 6: *Initial presentation.*

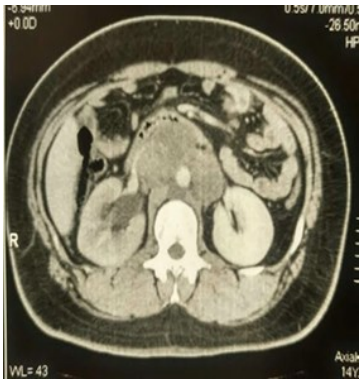

Fig 7: *CT SCAN or retroperitoneal mass.*

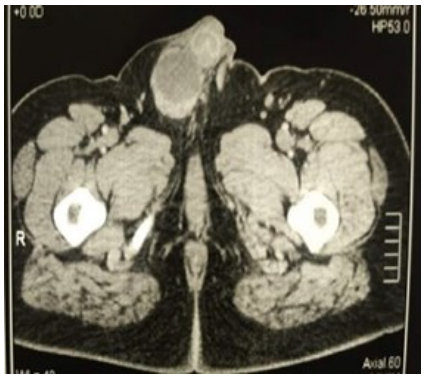

Fig 8: *CT scan of testicular Mass.*

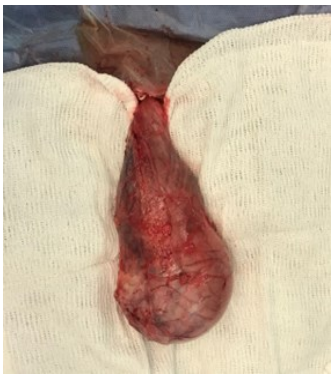

Fig 9: *Operative findings.*

Case 4: Precocious Puberty.

Clinical Presentation: The patient is being followed up for short stature and precocious puberty. A right testicular mass was noted in April 2018, leading to a referral to the hematology-oncology service of our hospital.

Physical Examination: Enlargement of the right testicle, firm-elastic, non-tender, accompanied by a movable, non-tender oval formation in the upper pole.

Complementary Studies

Laboratory: Alpha-fetoprotein 24.5, B-HCG 4064.

Testicular Ultrasound: In the right testicle, two hypoechoic Figures with ill-defined borders, highly vascularized (11.8 x 9 mm and 6.8 x 4.1 mm). Right epididymis showed a cystic Figure of 4.7 mm compatible with an epididymal cyst. The left testicle appeared homogeneous, and the left epididymis had a cyst of 2.4 mm.

CT scan of the Thorax-Abdomen-Pelvis: Retroperitoneal lymphadenopathy infrarenal and right iliac primary, with the largest being at the precaval level (iliac venous bifurcation) measuring 20 x 20 mm.

Presumptive Diagnosis: Testicular neoplasm.

Intraoperative Findings: Testicular mass; orchiectomy and funiculectomy were performed.

Pathological Anatomy: Testicular choriocarcinoma with a free margin of disease.

Follow-Up: Managed by hematology-oncology. Discharged from both services.

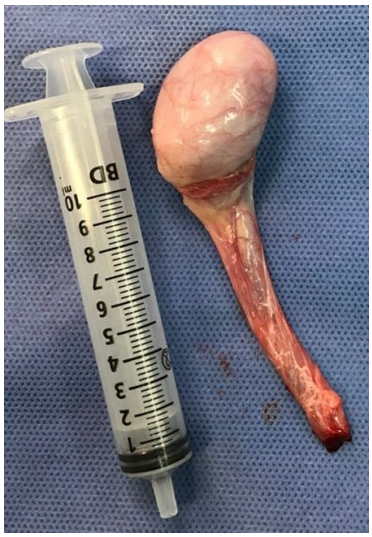

Fig 10: *Operative findings.*

Case 5: Testicular Trauma.

A 5-year-old patient with no relevant medical history was brought in by his mother due to scrotal edema following a mild trauma at school.

The previous physical examination was normal, according to the mother's report.

Date of Trauma: June 19, 2024

Consultation Date: June 30

Diagnosis: Scrotal Hematoma

Ultrasound Findings

Right Testicle: Located in the inguinal canal, with preserved shape, size, and structure. Doppler ultrasound showed positive results. Measurements: 10 x 8 x 7 mm. Increased thickness of the scrotal sac and its tunics (24 mm), with an echogenic appearance, microcalcifications, and increased vascularization. Between the visceral and parietal layers of the vaginal tunic, rounded Figures with well-defined contours were observed, appearing nodular, along with moderate hydrocele.

Left Testicle: Preserved shape, size, and structure, measuring 9 x 7 x 7 mm. Doppler ultrasound showed positive results.

Physical Examination: Solid/cystic mass in the right hemiscrotum. Hydrocele extending to the inguinal canal. Slightly painful.

Ultrasound Results: Right Testicle: Located in the inguinal canal. Preserved shape and structure. Doppler ultrasound positive. Mild to moderate hydrocele, measuring 23 x 8 x 17 mm (1.9 cc).

Left Testicle: Located in the inguinal canal. Preserved structure, measuring 14 x 5 x 9 mm (0.3 cc).

Regarding the right scrotal sac, the scrotal wall showed increased thickness with multiple echogenic nodular Figures, with defined borders, tending to confluence, appearing solid and hypervascularized on Doppler. This could correspond to a primary paratesticular process. Correlation with clinical findings and MRI is recommended.

Tumor Markers:

- AFP: 1.5

- ACE: 0.7

- BHCG: <0.5

- LDH: 294

Plan: Inguinal incision, vascular control, and total orchiectomy due to solid tumor.

Pathology Results: Pending.

Outpatient Management: To be conducted.

Fig 11: *Preop.*

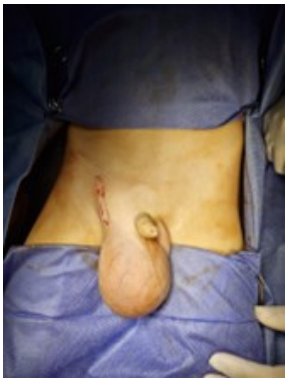

Fig 12: *Incision*

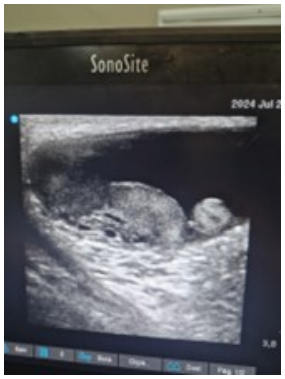

Fig 13: *Ultrasonography.*

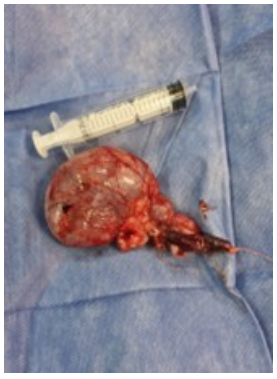

Fig 14: *Surgical findings.*

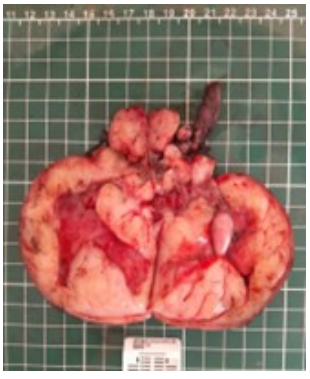

Fig 15: *Pathology.*

Discussion

Testicular and paratesticular neoplasms in childhood, while uncommon, present significant challenges for both diagnosis and treatment. Although they account for only 1-2% of solid tumors in children, their clinical relevance arises from the variety of presentations and histological types that can complicate clinical practice. This study presents five atypical cases of testicular and paratesticular tumors, each revealing unique characteristics that underscore the need for thorough and multimodal evaluation.

Testicular neoplasms can be classified as benign or malignant, with mature cystic teratoma being the most frequent tumor among benign types, while malignant tumors exhibit greater heterogeneity. In our series, we included a deep lymphangioma, a paratesticular ganglioneuroma, a mixed tumor, and a choriocarcinoma, three of which presented atypical characteristics, reinforcing the idea that broader differential diagnoses should be considered in scenarios where clinical presentations do not align with typical patterns.

One notable finding is the case of the ganglioneuroma, which, although rarely found in this region, should be considered in any patient with a mass in the testicular or paratesticular area, particularly in the context of symptoms such as acute pain. This case exemplifies how radiological findings and clinical data can initially lead to a misdiagnosis, in this instance, presuming testicular torsion. This highlights the importance of complementary imaging studies and the need for a robust clinical evaluation, as surgical decisions may depend on an accurate diagnosis.

In case 3, where a mixed tumor with elevated tumor markers and systemic presentation (vomiting and weight loss) was identified, we observe the complexity of managing these neoplasms. The elevation of tumor markers such as alpha-fetoprotein (AFP) and beta-hCG not only aids diagnosis but also indicates a more serious prognosis, signaling possible disease dissemination.

The case of choriocarcinoma, in particular, emphasizes the need for a multidisciplinary approach due to its aggressive potential, especially in the context of precocious puberty. This tumor, although infrequent in childhood, can have significant implications for the pubertal development of patients, highlighting the need for timely intervention not just from an oncological perspective but also within pediatric endocrinology.

Despite the severity that some of these tumors may present, most cases are diagnosed at early stages, allowing for decisive intervention and favorable prognosis. The rate of radical orchiectomies performed in over 75% of cases in our series reflects the necessity of appropriately managing these neoplasms, with surgery being a fundamental pillar in their treatment.

In conclusion, while testicular and paratesticular neoplasms in pediatrics are rare, their variability in presentation demands a high level of clinical suspicion and a solid diagnostic strategy. Accurate recognition and classification of these tumors are crucial not only to optimize outcomes in terms of survival and testicular function but also to preserve the overall health and development of our patients. Care in these cases should be accompanied by an interdisciplinary approach to adequately address each aspect of the patient's condition. [1-8]

Conclusions

The analysis of atypical cases of testicular and paratesticular neoplasms in pediatric patients highlights the complexity and diversity of these conditions, which, although infrequent, require a precise and multifaceted clinical approach. Early detection and accurate identification of these tumors are essential to ensure effective treatment and a favorable prognosis.

The cases presented emphasize the importance of maintaining a high level of clinical suspicion, especially when symptoms and radiological findings do not align with common diagnoses, such as testicular torsion. A comprehensive clinical history and appropriate imaging studies are crucial for differentiating between various pathologies, enabling timely surgical interventions.

A multidisciplinary approach is vital, integrating oncology, pediatric surgery, and endocrinology to provide holistic care that addresses both oncological needs and the physical and hormonal developmental considerations of the patients. This is particularly relevant in cases such as choriocarcinoma, where the aggressiveness of the tumor can significantly impact the long-term health of the child.

Finally, collaboration among different specialties not only improves survival rates but also optimizes the post-treatment quality of life for patients, preserving testicular function and minimizing complications. Continuous research and learning in this area are essential for improving diagnostic and treatment protocols, ensuring that each patient receives the most appropriate and effective care. In summary, a multidisciplinary approach and rigorous clinical vigilance are key to addressing these challenges in pediatric care for patients with testicular and paratesticular neoplasms.

Conflict of Interest

The authors declare that they have no competing interests.

Acknowledgement

None.

References

1. Akiyama S, Ito K, Kim WJ, Tanaka Y, Yamazaki Y. Prepubertal testicular tumors: a single-center experience of 44 years. Journal of Pediatric Surgery [Internet]. agosto de 2016.
2. Shen J, Bi Y, Wang X, Lu L, Tang L, Liu Y, et al.Shen J, Bi Y, Wang X, Lu L, Tang L, Liu Y, et al. Epidemiologic study of 230 cases of testicular/paratesticular tumors or masses: 15-year experience of a single center. Journal of Pediatric Surgery. Diciembre de 2017.
3. Rescorla FJ, Ross JH, Billmire DF, Dicken BJ, Villaluna D, Davis MM, et al. Surveillance after initial surgery for Stage I pediatric and adolescent boys with malignant testicular germ cell tumors: Report from the Children's Oncology Group. Journal of Pediatric Surgery.
4. Hoag NA, Afshar K, Youssef D, Masterson JST, Murphy J, MacNeily AE. Cystic intratesticular lesions in pediatric patients. Journal of Pediatric Surgery.
5. Friend J, Barker A, Khosa J, Samnakay N. Benign scrotal masses in children – some new lessons learned. Journal of Pediatric Surgery.
6. Pearse I, Glick RD, Abramson SJ, Gerald WR, Shamberger RC, La Quaglia MP. Testicular-sparing surgery for benign testicular tumors. Journal of Pediatric Surgery.
7. Maizlin II, Dellinger M, Gow KW, Goldin AB, Goldfarb M, Nuchtern JG, et al. Testicular tumors in prepubescent patients. Journal of Pediatric Surgery [Internet]. septiembre de 2018.
8. F Alfredo Arroyo D, Dardanelli E, Goldberg A, Zubizarreta P, Dávila G, Moguillansky S. TUMORES TESTICULARES PRIMITIVOS EN PEDIATRÍA. HALLAZGOS FIGURENOLÓGICOS Y CORRELACIÓN ANATOMOPATOLÓGICA EN 66 CASOS.

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