

## Ovarian Juvenile Granulosa Cell Tumour in Childhood: About Two Cases

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**Received:** April 12, 2018; **Published:** April 27, 2018

### Abstract

The ovarian tumors of the juvenile granulosa Cell tumour (GCT) remain of unknown etiology, occur in 5% of cases in the pre-pubertal period. In tumors in adults these tumors are benign in 80% of cases The clinical presentation will often involve nonspecific symptoms, ranging from non-painful abdominal swelling in the majority of cases to hormonal manifestations with early puberty related hormone secretion by the tumor.

Two cases of juvenile granulosa tumor were observed in the infant surgery department of the Constantine in our hospital between 2014 and 2015. In the light of these cases and data from the literature, we analyze epidemiological, anatomopathological data, diagnostic, clinical and therapeutic of this type of tumor.

**Keywords:** Ovarian Tumor; Juvenile Granulosa Tumor; Child, Surgery

### Introduction

The ovarian tumors of the juvenile granulosa (GCT) are tumors that develop from the structures of the ovary [1]. Being an integral part of mesenchyme and sexual cord tumors representing only 2 to 3% of ovarian cancers.

We do not have national statistics of the juvenile GCT, this can be explained by means of representativity, but according to a French study, their frequency is estimated between 0.6 to 3% of all ovarian tumors [1].

The dogmatic diagnosis is anatomopathological and histological, so far the clinic can lead from an abdominopelvic tumor syndrome and endocrinological emanations (alpha feto-protein BHCG, estradiol) and recently inhibin, which represents the most important marker specific.

The use of additional examinations is imperative especially ultrasound imaging. Differential diagnosis is not always trivial on clinico-radiological and even macroscopic data, which can only provide primary approaches, however readjusted by microscopic study and recently by immunohistochemistry.

Surgery is the gold-standard in therapeutics that comes under specialized expertise. The juvenile GCTs are counted among favorable-prognosis tumors with a survival rate of 90% in the first five years following its discovery.

**Case Report**

**Observation 1**

4-years old girl, with no particular pathological background, The parents have seen for about 15 days the appearance of a breast bud, associated with an increase in abdominal volume without impact on the general good health. The abdominal examination found a painless abdominal-pelvic mass measuring approximately 10 × 10 cm in diameter, of hard, well-defined consistency, mobile in relation to the superficial plane, and fixed in relation to the deep plane, without collateral vein circulation, without signs hypersecretion and a non-depleted umbilicus. Abdominopelvic ultrasonography was performed, which revealed a heterogeneous left abdominal-pelvic mass, 10 cm long, with a major axis of probable adnexal involvement (Figure 1), associated with an abnormally developed of uterus. no effusion, no deep lymphadenopathy, and no liver injury.



**Figure 1:** Abdominopelvic ultrasound image showing multiclastic cystic formation.

An abdominopelvic CT showed a heterogeneous, abdominal-pelvic mass supravescical left difficult to specify (Figure 2). The hormonal FSH LH assays were in the norms except that oestradiol was abnormally increased. Tumor markers (alpha-fetoprotein and beta HCG) were normal. Surgical exploration found a tumor at the expense of the left ovary 25 × 20 cm (Figure 3), with a serous effusion. The anatomo-pathological study returned to a juvenile granulosa secreting tumor.



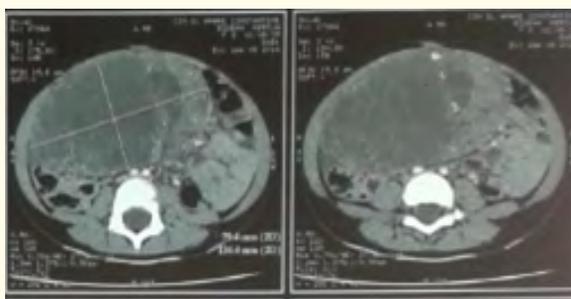
**Figure 2:** Abdominopelvic CT showing solido-cystic pelvic developmental mass.

The postoperative course was simple. The patient received periodic clinical and radiological monitoring through abdominal and pelvic ultrasounds. This follow-up was without particularities. Pediatricians decided that the patient would not require chemotherapy or radiotherapy.

**Observation 2**

3 years old girl without significant medical history. After 3 months of constipation, which was resistant to usual treatment, the latter was not accompanied by other symptoms. The subsequent abdominal and pelvic ultrasonography showed a large solidocystic abdominopelvic mass belonging to the right ovary.

The scan of the abdomen showed a voluminous mixed, cystic and fleshy process of right pelvic abdominal seat, evoking either an ovarian tumor mass or a cystic lymphangioma, multiple coeli-mesenteric adenopathies pushed back to the left flank and latero-uterine, without effusion and without lymphadenopathy (Figure 3).



*Figure 3: TDM abdominopelvic cross-sections showing solidocystic pelvic development mass at the left ovarian.*

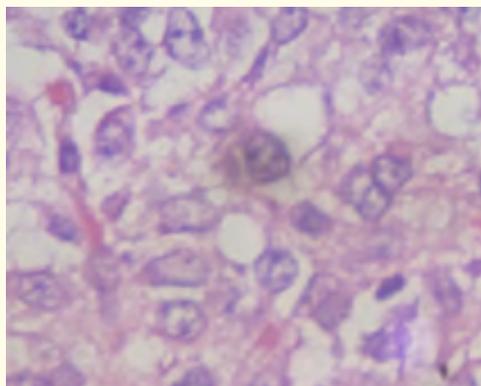
We recommended a diagnostic and therapeutic laparotomy for her. Under general anesthesia, a medial umbilical incision was made. Exploration revealed the presence of a solid right ovarian mass measuring 15 cm, an annexectomy with salpingectomy was subsequently performed. The left ovary was normal as well as the rest of the exploration (Figure 4).



*Figure 4: Picture demonstrating the excised left ovarian mass .*

The mass was sent for histopathological study to the pathological examination; it is a non-secreting granulosa tumor (Figure 5).

Immediate and short-term outcomes were favorable, no chemotherapy was needed. After one year of retreat the patient is doing well clinically, tumor markers without negatives.



**Figure 5:** Microscopic image of tumor dense ranges of non-incised, hyperchromatic nucleus cells.

## Discussion

The ovarian tumors of the juvenile granulosa (GCT) are rare ovarian neoplasms [1], accounting for 0.6 to 3% of all ovarian tumors and 5% of malignant tumors [1]. Their diagnosis is anatomopathological based essentially on morphological data. They develop from the granulomatous and thecal cells. There are two types: the adult type (TGA) which is the most common and the juvenile type (GCT), the latter is distinguished by a relatively younger age of onset, affect the more often teenagers between 10 and 20 years old [2]. Less than 10 years in half of the cases, a different morphological aspect with more pronounced histological signs of malignancy and a higher risk of recurrence [4].

Kalfa, *et al.* Have identified the offending gene in the genesis of these tumors. FOXL2 (transcription factor gene) has mutations in the majority of granulosa cell tumors. The latter could revolutionize the treatment of these tumors [5].

Other research was also initiated to try to explain the genetic theory in the genesis of these tumors, two genes were identified: Fas, FLIP and Bcl-2, their mutation seem to be involved in the alterations of the architecture of the ovary responsible for the design of the TGJ ended by the study of Yoo, *et al* [6].

The methods of clinical revelation are divided into two syndromes: the tumor syndrome which is manifested by an increase in the volume of the abdomen following the appearance of a mass, discovered during a systematic clinical examination most often done in very numerous circumstances, or motivated by digestive symptoms [1], this is the case of our second patient whose first reason was a constipation retive tumor compression of the digestive structures. endocrine syndrome [3] close to the secret character of the tumor, is manifested by a pseudo isosexual precocious puberty of up to 80%. Given their estrogen-secreting character described in 70% of cases of Juvenile GCT [1] sometimes times signs of hirsutism, with clitoral hypertrophy in androgenic secretion tumors what was superimposable in the first case, which obviously presented an impregnation Hormonal breast and uterine.

Acute manifestations of a type of abdominal pain are unaccustomed evidence of a complication type of torsion or tumor rupture.

The tumor size varies between 25 and 15 cm, which seems to have no orientation on the secretory type of the tumor but may be the subject of multiple complications described above (torsion or intra-tumoral hemorrhage).

Ultrasound and computed tomography, provide excellent information for the exploration of ovarian tumors. Juvenile GCT generally have a multi-cystic aspect with hemorrhagic changes [1]. On the abdomino-pelvic ultrasound of the 1<sup>st</sup> patient we note the presence of a solido-fleshy aspect; while the appearance of the tumor in the 2<sup>nd</sup> child was solido-cystic the latter which seems to be a primary orientation on whether the tumor is secretive or not.

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The tumor localization was unilateral in both cases, however Young RH et al reported in one study the existence of a bilateral form [8]. This complicates the therapeutic attitude, especially the surgery, which is already inappropriate and adapted on a case by case basis.

The main immunohistochemical markers expressed by these cells are: vimentin, CD 99 and alpha inhibin. Regarding inhibin, its value can be correlated to the mass of the tumor, with an increase in its blood level a few months before the appearance of clinical signs.

Serum tumor markers are estradiol, inhibin, and anti-Müllerian hormone. The cancer 125 antigen (CA-125) has no place in the juvenile GCT, moreover its increase does not have reciprocity with the progression of the tumor [6].

Histologically, juvenile GCTs are small cells filled with acidophilic material that can be luteinized Rare focal cell differentiation (large cells with abundant eosinophils, slightly granular cytoplasm) of the central nuclei and a single nucleolus [9].

The main differential diagnoses of juvenile GCT are of the order of two groups. Organic cysts are represented by serous cystadenoma, mucinous cystadenoma and cystadenocarcinoma [1]. While functional cysts are represented by the follicular cyst and the cyst of the corpus luteum (luteal cyst) This relative rarity is explained by the fact that only large tumors or those which are complicated have a clinical translation [10].

Surgery represents the gold standard of treatment of juvenile GCT as adopted in our two young patients, however the latter must be conservative based on an annexectomy with meticulous exploration of the contralateral ovary, a biopsy can take place in case of suspicious lesions or well in bilateral juvenile GCT although these forms are rare [8]. Considering the rarity of lymph node metastasis, cleaning is not practiced as a rule [1] we performed for the same reason in our two patients a unilateral adnexectomy carrying the entire tumor mass.

Chemotherapy with Cisplatin is proposed in case of recurrence as a compliment of a surgical revision [8]. The post-treatment surveillance should be prolonged and reconciled in the first postoperative years based on the serological determination of inhibin and anti-multerian hormone which are more reliable for juvenile GCT.

### Conclusion

The literature concerning tumors of the infant ovary is very rich but very few articles treat juvenile GCT because of their scarcity.

Their secretory nature facilitates the diagnosis, which is often ambiguous in the clinical symptomatology common to several tumoral syndromes.

Anatomopathologic is the share of these tumors. The treatment is from the outset radical based on surgery while being conservative. Recurrence remains the major fear of these tumors considered indulgent. Currently aunt researchers to stem this pathology via hormonal treatment.

### Conflict of Interest

The authors have no conflict of interest.

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**Volume 7 Issue 5 May 2018**

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