GRANULOSA THECA CELL TUMOR: A CASE REPORT AND LITERATURE REVIEW

Tatjana Kastratovic[1], Slobodan Arsenijevic[2], Irena Vukovic[1], Nikola Mirkovic[3], Ljubisa Acimovic[3]
[1]Department of Histology, School of Medicine, University of Kragujevac, [2]Clinic of Obstretics and Ginekology, [3]Surgical Clinic, Clinical Centre Kragujevac, Kragujevac, Serbia

GRANULOZA TEKA ĆELIJSKI TUMOR: PRIKAZ SLUČAJA I PREGLED LITERATURE

Tatjana Kastratović[1], Slobodan Arsenijević[2], Irena Vuković[1], Nikola Mirković[3], Ljubiša Aćimović[3]
[1]Katedra za histologiju, Medicinski fakultet Univerziteta u Kragujevcu, [2]Klinika za ginekologiju i akušerstvo, [3]Hirurška klinika, Klinički centar Kragujevac, Kragujevac, Srbija

Received/Primljen: 05. 11. 2007. Accepted/Prihvaćen: 26. 12. 2007.

ABSTRACT
Granulosa theca cell tumors derive from cells of the umbilical cord, and produce hormones; in most cases they manifest themselves through the symptoms of compressive growth: pain, pressure on adjacent organs, hemorrhage. Here, a case of female patient in the post menopause has been shown,who was hospitalized due to the loss of appetite, fatigue, flatulence of the abdomen and complicated peristaltics. The diagnosis confirmed the existence of a large tumor in the abdomen. The tumor has been completely removed through a surgical procedure, followed by hysterectomy with bi-lateral adnexectomy. The size of tumor was 24x12x32 cm, weight 6380g. Pathohistological diagnosis: Thecoma benignum.
Key words: ovary, granulosa cell tumor, theca cell

SAŽETAK
Granuloza-teka tumori potiču od ćelija polne vrpce. Granuloza-teka tumori produkuju hormone ali u većini slučajeva se manifestuju simptomima kompresivnog rasta: bol, pritisak na susedne organe, krvarenje. Prikazan je slučaj bolesnice u postmenopauzi koja je hospitalizovana zbog gubitak apetita, malaksalost, nadutost trbuha i otežane peristaltike. Dijagnostika je potvrdila postojanje velikog tumora u trbuhu. Operativnim zahvatom odstranjen je tumor u celini, uz prateću histerektomiju sa obostranom adneksektomijom. Veličina tumora je bila 24x12x32cm, težine 6380g. Patohistološki nalaz: Thecoma benignum.
Ključne reči: ovarijum, tumor granuloza ćelija, teka ćelije

INTRODUCTION
Granulosa - theca cell tumors (GCTs) are stromal tumors deriving from cells of the umbilical cord. GCTs make about 2% of all ovarian neoplasms (1). They are composed of granulosa cells, theca cells and fibroblasts with various degree of occurrence. Thecomas are tumors which have more than 25% of theca cells. They are, in essence, benign neoplasm and have a good prognosis but depending on the occurrence of granulosa cells, they can show malignant potential (1, 2). Despite their generally good prognosis, patients with GCTs require monitoring over a long period of time, due to a high probability of recidivism (3-5). They are diagnosed mostly in the period of post menopause, and rarely occur in women younger than 30 years of age, with the exception of luteinizing thecoma (3, 4).The incidence of this group of tumors is different in various parts of the world.

CASE REPORT
Patient R. A., age 57, was hospitalized due to the loss of appetite, loss of body weight, fatigue, flatulence and constipation.

Clinical examination

Laboratory analysis: values of biochemical and hematological analyses were in accordance with reference values, tumor marker CA 125–4,614 IU/ml (normal from 0–35).

Abdominal ultrasonograpy: inside the abdomen a large mass (25x20cm) was spotted, mildly heterogenous with vascularisation of the tissue. The capsule was smooth and homogeneous. In the tumor mass, there were no necrotic changes. Inside the pelvis, gynecological organs were not clearly differentiated.

Pelvic and abdominal CT: centrally in the abdomen, beginning from the infracolonic region to uterus, a solid, soft-tissue expansive mass was differentiated, with clear borders, pressure adjacent organs and compressing the roof of vesica urinaria, and with front part in contact with the parietal peritoneum; the size of the mass was 239 x 144 x 256 mm (without the possibility of differentiating corpus uteri and ovaries). The entire tumor mass was of non- homogeneous structure (dominant attenuation of the soft tissues 36 Hu) with erratic, central necrotic zones (25 Hu) which was, after i. v. administration of contrast, discretely colored, so attenuation values rase up to 48 Hu. Vesica urinaria had good capacity, and clear borders without the intraluminal pathological content, with indications of the extraluminal compression of the roof and left lateral wall. No signs of retroperitoneal or pelvic lymphadenopathy have been spotted. Ischiorectal pits were free. Right in the subcutis of inguinum, there was one lymphatic node 12 mm in diameter. There was also free fluid in the abdomen (figure 1).

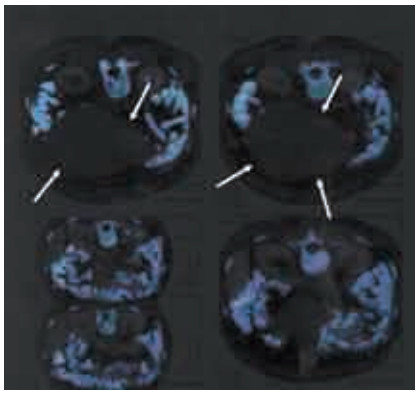

Figure 1. CT scan of the tumor mass in the abdomen.

Correspondence:
Tatjana Kastratovic
Department of Histology, School of Medicine, University of Kragujevac
Svetozara Markovica 69
34000 Kragujevac, Serbia

Diagnosis: tumor abdominis per magna
After proper preoperative preparation, the operative procedure was performed.
Laparotomia transumbilicalis. Extirpatio tumoris in toto cum hysterectomia et adnexectomia billateralis. Drainage cavi Douglasi.
Pathohistological report: Macroscopic spherical node, weight 6380 g, gray-brown, 320 mm in diameter. The tumor is solid (as viewed after the incision), of pale yellow color (figure 2, 3).

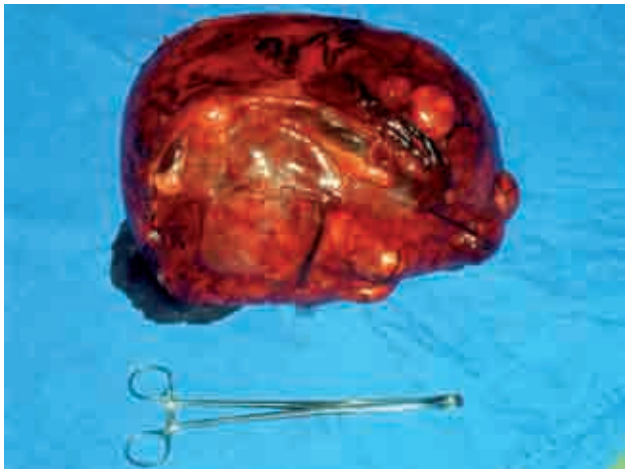

Figure 2. Macroscopic view of the tumor.

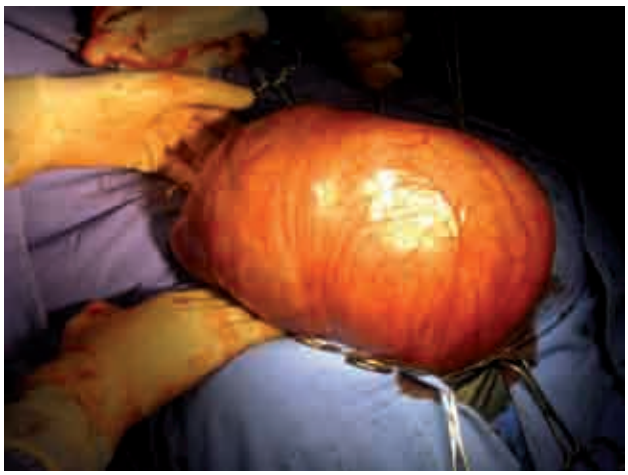

Figure 3. The tumor mass intraoperatively.

Microscopic findings confirmed thecoma benignum, atrophia cystica endometrii, polypus fibroadenocysticum endometrii and salphingitis chronica fibrosa.
Preparations have been colored with hematoxilin-eosine technique. Immunohistochemical coloring has been done through a standard DACO procedure for the identification of antigen expressed on structural components of the ovarian thecoma, α-smooth muscle actin, vimentin, CD34 and coloring of estrogen.
On the analyzed samples of the thecoma tumor, large, extended and spindle-shaped theca cells were noted, filled with vacuoles with lipidic inclusions. Inside the tissue, disoriented, hyaline, bonding strands composed of collagen are shown (figure 4).

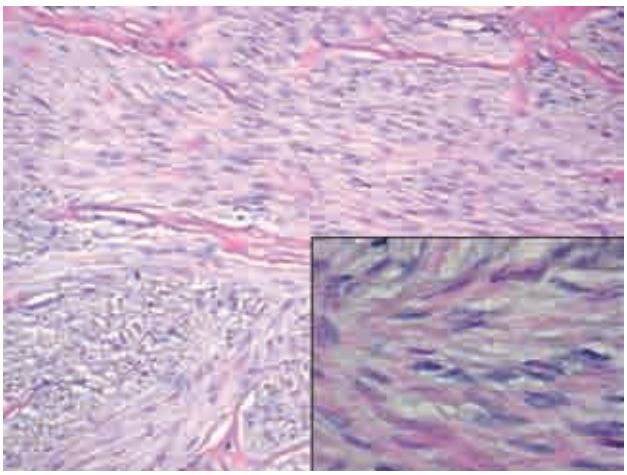

Figure 4. Hystological structure of the thecoma tumor (H&E x128). At higher power (insert) (H&E x256).

Theca cells derive from mesenchymal stroma of the ovarian cortex, similar to fibroblasts (5). Alpha-smooth muscle actin (α-isoform of actin protein) forms actine myofilaments present in the cytoplasm of smooth muscle cells in blood vessels, myoepithelial cells and pericytes, but also stromal cells of the digestive tract, testicles, breasts and ovaries (6). Antibodies for this protein color selectively actin microfilaments in cells of theca tumors because of their mesenchymal stromal embryonic origin. Distribution of α-smooth muscle actin confirms extensive presence of microfilaments in tumor cells of thecoma, which confirms that the tumor originates from cells of the ovarian stroma (figure 5).

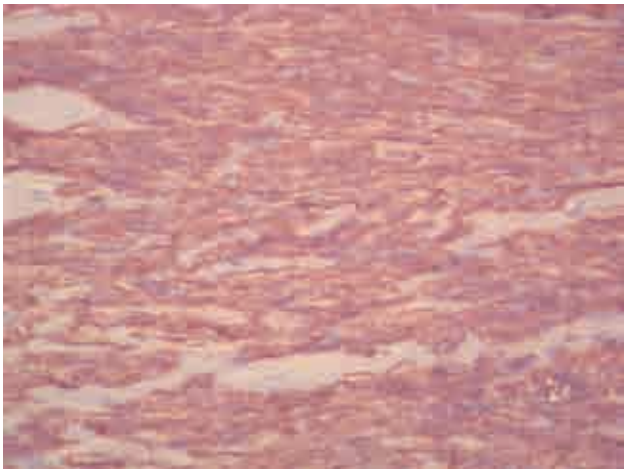

Figure 5. Thecoma tumor (immunohistochemical coloring of α-smooth muscle actin x128).

Vimentin is a protein present in intermediary filaments of all cells of mesenchymal origin: fibroblasts, endothelial cells, smooth muscle cells, chondrocytes, lymphocytes and blood cells (7-9). Here, the distribution of vimentin in endothelial cells of tumor blood vessels has been shown, as well as in some tumor cells (figure 6), which proves that the tumor originates from cells of the ovarian stroma.
CD34 antigen transmembrane glyco-protein is present on the surface of progenitor cells, as well as on some tissue fibroblasts (11-13), and its identification on endothelial cells of some tumor blood vessels indicates

that it is a tumor neovascular formation. Immunohistochemical coloring proved that claim and further proved the existence of large numbers of newly formed blood vessels (figure 7).

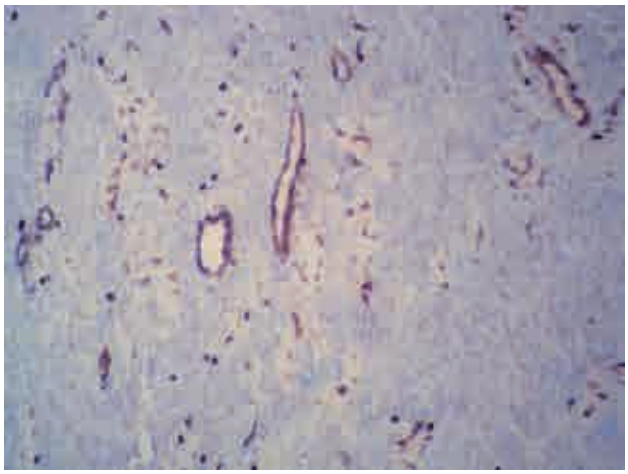

Figure 6. Thecoma tumor (immunohistochemical coloring of vimentin x64).

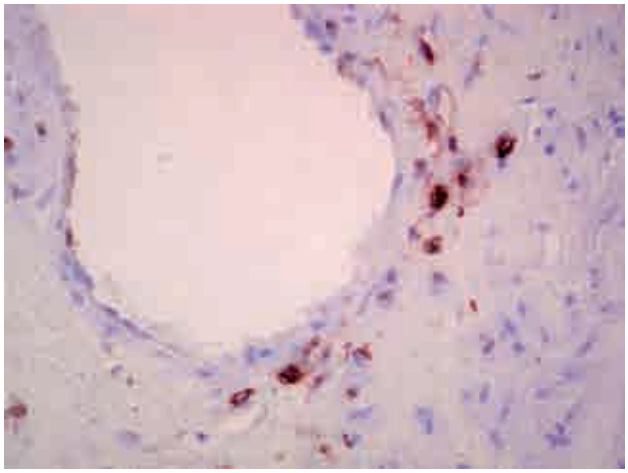

Figure 7. The thecoma tumor neovascularisation (immunohistochemical coloring of CD 34 x256).

The tumor is hormonally independent, since estrogen coloring is negative.

DISCUSSION

Granulosa - theca cell tumors are usually large, benign cell tumors with cystic degeneration (13, 14). Thecomas are usually developed in women after the menopause, they can grow up to 7–8 cm and in more than 97% of all cases are unilateral. We have shown here a case where thecoma has grown to a gigantic size (24x14x32 cm in diameter, weight 6380 g).

These tumors can be hormonally active. Their hormone activity has different symptoms: menorrhagia, menometrorrhagia, amenorrhea, endometrial hyperplasia, endometrial CA or fibrocystic disorder of breasts (15). Although they produce hormones, in most cases these symptoms are not spotted, and their main symptoms are enlargement of the abdomen and feeling of uneasiness in the same region (85% - 97%) (3, 4, 16). With its size, the tumor mass can compress adjacent organs, which leads to the abdominal pain, dissuria and constipation. The abdominal symptoms are a consequence of enlargement of the tumor mass, but also of ascites which occurs due to compression on the abdominal blood vessels, which happens in 10% of all cases (17). In this case, the patient had symptoms of compression on adjacent organs but without ascites.

The diagnosis of thecoma is accidental and is established after the clinical examination, laboratory analysis, X-ray analysis, sonography, CT findings, MNR analysis and histological analysis.

Granulosa - theca cell tumors compress adjacent organs with their growth, and they must be discerned from adnexal tumors, appendicitis, ascites, cervicitis, colon carcinoma, colon obstruction, ectopic pregnancy, ovarian cysts, inflammatory pelvic disorders, polycystic ovarian syndrome, obstruction of the urinary pathway, carcinoma of the uterus, omentum adhesion, lowered cecum, endometriosis, ovarian torsion, hydrosalpinx, pyosalpinx, pelvic abscess, anomalies of the uterus, retroperitoneal masses, peritoneal cysts, benign lesions of the corpus uteri (3,4). Due to their hormonal production thecomas create the image of real premature puberty, polycystic ovarian syndrome and adrenal tumor. They rarely imitate pregnancy (3, 4).

The primary treatment of patients with GCTs is always surgical. In this case, the operation has been done.

In early stages, gynecological examinations and tumor marker estimation are often used in order to determine possible recidivism in early stages. The largest number of recurrent tumors is limited to lower pelvis and the abdomen (18). Postoperative monitoring is conducted in intervals of 2–3 months in the first 2 years for patients with no chemotherapy or every 3–6 months in the next 3 years (19). Control examination after 3 and 6 months has not shown recidivism of the tumor in patient R. A. Chemotherapy and/or radiotherapy are implemented in later stages of illness or in patients with recidivism (17, 20).

The prognosis of GCTs is generally good. Almost 90% of GCTs is in the stage I at the moment of diagnosis. The survival rate for GCTs in the stage I within ten- year period is 90–96%, and in later phases, the survival for the same period of time is only 33–44%. Five-year survival rate is 90%. 'Pure' thecomas have a good prognosis – the survival rate for 5 year period is almost 100%, but production of estrogen may cause endometrial hyperplasia, endometrial CA and possible CA of breasts, thus elevating morbidity (19, 21).

Thecomas occur rarely, and mostly as a hormone producing tumor, but in practice their manifestations are still tied to its growth and compressive symptomatology. Here, a case of gigantic thecoma has been shown whose clinical manifestations were a result of compression inside the abdomen.

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