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Tumor and cystic neoplasms in the newborns

Abstract

Freguency of malignant neoplasms in the newborn is 1,88 – 3,65 on 100 thousand live births, that is in 10 times less than that of older children [5]. 40% of neoplasms are detected at birth. The majority of tumors diagnosed prenatally, are not malignant. 39 newborns with tumoral and cystous formations of various localization were observed in surgical department of the Pediatric center from 1999 for 2012. 14 newborns were with ovarian cyst, 6 children had teratomas of sacrum and coccyx area, 6 babies had lymphangiomas of various localization, other babies were with new growths in an abdominal cavity and peritoneal space. New growths of malignant character were revealed among 7 newborns (18%). 36 children were operated (92%), the lethality in group of newborns with new growths made 7.6% (3 patients).

Keywords: newborns, tumors, cysts of abdominal cavity, neonatal oncology.

Materials and methods:

The analysis of the newborns addressed to surgical department of the Pediatric center with various new growths and cystous pathology from 1999 for 2012 was carried out. 25 babies were with new growths, 14 were with ovarian cyst. Very often the diagnosis of a new growth is made on screening ultrasonography of the newborn and postnatal clinical picture. Over the last 5 years ovarian cyst is diagnosed antenatally on 3rd fetus ultrasonography in the period of 32-33 weeks of a gestation. In these cases the differential diagnosis is constructed between enterocysts which can cause in the neonatal period an obturation of a gleam of an intestinal tube and clinic of partial intestinal impassability, and ovarian cysts which lead to twist emergence with violation of blood circulation in a cyst [7]. Therefore the newborns with cystous formations in an abdominal cavity in the absence of clinic of intestinal obstruction after the early neonatal period arrived on expeditious treatment in surgery. In group of newborns with tumors the most frequent pathology are sacrum and coccyx teratomas (6), lymphangiomas of various localization (6 – mesentery of a thick gut, of a neck, of a trunk and a hip of the big sizes), formations of a liver (hepatoblastomas in 3 cases,

hamartoma a liver, lymphangioma and hemangioendothelioma – in the whole 6 formations), 5 newborns were with new growths of peritoneal space and had 4 neuroblastomas and 1 child had the kidney tumor, all formations were of malignant character.

Table 1

Neoplasm	Quantity of patients	Nosology
sacrum and coccyx teratoma	6	
lymphangiomas	6	in the area of mesentery – 1, large neck – 2, inguinal region – 1, torso – 1, hip – 1
neoplasm of liver	6	hepatoblastomas – 3, hamartoma – 1, hemangioendothelioma – 1, lymphangioma - 1
new growths of peritoneal space	5	neuroblastomas of adrenal area – 2, neuroblastomas of peritoneal space – 2, mesonephroma of kidney- 1
dermoid tumor of mesentery	1	
pancreatic cyst	1	
Total:	25	

The majority of newborns were full-term children, prematurely born 5 babies (13%), one of them was born from triplets with antenatally established diagnosis of sacrum and coccyx teratoma.

92% of newborns were operated, including 3 hemihepatectomies. 3 newborns weren't operated: two of them were with malignant tumors – a neuroblastoma of peritoneal space with metastasises in a liver and hepatoblastoma striking both shares of a liver; in the first operation a biopsy of a liver tumor was carried out, hamartoma of liver was histologically verified, but owing to bilateral hydrothorax in the postoperative period the patient died.

Results of discussion

According to medical data the main part of newborns' pathology are cases of sacrum and coccyx teratomas. In most cases teratomas come to light antenatally from 22 weeks of a gestation because they are laid at early stages of embryogenesis [8]. The ultrasonography of a fetus is to specify localization, structure, the amount of formation, the existence of other pathology of internals. Teratomas are more often localized in sacrum and coccyx area, but their localization in mediastinum and in abdominal cavity can seldom be noted [9]. Sacrum and coccyx teratomas can get into peritoneal space, in this case teratomas are divided into 4 types: the type I is with the external tumoral component; the type II is with a small presacrum component, the most part of

formatiom being outside; the type III is a small external component, the most part is situated in posterior aspect of peritoneal space; and the type IV is without an external component. Teratoma can be solid in structure (in this case the forecast for the patient is unfavorable), mixed and cystous. The teratomas of large dimensions have the "burglarizing" phenomenon in consequence of plentiful teratoma blood supply can be observed, the thinning of a fetus myocardium is observed, the expansion of heart cavities, a hydropericardium, the prenatal death of a fetus being as a result. [1]. Sometimes the delivery involving surgery can be proposed depending on the tumor dimensions.

Malignant marker of teratoma is Abelev-Tatarinov's reaction to level of embryonic protein – alpha fetoprotein. In the first week of life the AFP level at the newborn is raised, then it sharply decreases, and at some malignant teratomas this protein is produced by a tumor and its level remains raised. The test also can be applied as an onkomarker at hepatoblastomas and teratoblastomas of ovary [10]. To diagnose sacrum and coccyx teratoma it is necessary to provide MRT or RCT of formation for measuring of peritoneal component (fig. No. 1), in certain cases teratoma can cause urination difficulty and constipation. In the first case the wrong tactics of newborn's teratoma sacrum and coccyx area treatment was chosen in remote district hospital – the formation was taken for post-injection abscess which was opened and drained. The girl was delivered to the Pediatric center and operated there. Teratomas are operated on the first week of life of the child because later risk of malignancy increases.

Surgical removal of formation requires the compulsory resection of a tailbone and plasticity of muscles of a pelvic bottom for prevention of "sagging" of a perineum. All six newborns were operated under our supervision – five on the first week of life, one on the 3rd week (operation was delayed for the girl from triplets because of the small weight and the symptoms of a prenatal hypotrophy). All cases were verified as mature teratomas histologically. In the remote period one child had a recurrence of a tumor at the age of three years result of histological research after repeated removal of formation of a small basin – the malignant tumor proceeding from cages of a yolk sac is noted, the child is on chemotherapy.

Peritoneal neuroblastomas proceed from sympathetic peritoneal ganglion or adrenal glands, are prognostically unfavorable (malignant) new growths if come to light in the neonatal period [2]. In the first case the adrenal gland neuroblastoma with metastasises in a liver was diagnosed, this patient hadn't been operated. In other cases the tumors were removed radically, children were transferred to constant supervision of children's oncologist.

Kidney formations in the neonatal period have more often happened good prognosis of disease because there is mesonephroma at this age verified histologically – the variant of innocent

Villiams tumor, the patient being on constant supervision of children's oncologist after nephrectomy.

Newborns formations of a liver aren't infrequent. Among 6 patients in half of cases the hepatoblastoma was revealed – one patient was inoperable owing to large size of defeat. One patient had histologically confirmed liver hamartoma, the others had lymphangioma (according to the results of histology) and infantile hemangioendothelioma. The diagnosis is confirmed by RKT (fig. 2), high rates of AFP prognostically indicate the existence of hepatoblastoma. Three newborns were subjected to hemihepatectomy (fig. 3): 2 cases were hepatoblastomas and 1 hemangioendothelioma. The hemihepatectomy resulted in one case a lethal outcome, one promised the good remote outcome, and one had a clinic of portal hypertensia in a later period.

Existence of lymphangiomas of large volumes, often intensive one, is the indication for operative intervention in the neonatal period. Especially it concerns localization of lymphangioma in a neck because the tension of formation can lead to sharp respiratory insufficiency through a compression of soft rings of a newborn's trachea. Except increase and tension lymphangioma can be complicated by infection and development of a sepsis. Lately the surgeries can apply more conservative methods of newborn's extensive lymphangioma treatment – the sklerotization angioma cavity made by etosisclerol foam as the safest and rather effective method of treatment.

Ovary cysts are not rare pathology in the neonatal period, recently cysts are more often diagnosed antenatally, the ultrasonography estimates the sizes of cysts and the existence of complications postnatally. The presence of suspension in a cavity of formation may be an ultrasonography sign of ovary cyst torsion (fig. 4), though pain syndrome can be not observed. For investigation period 14 girls with an ovary cyst were operated in the neonatal period (fig. 5). The cyst can sometimes overwind in the uterus and amputate itself from appendages, in these cases there are liquid structure freely lying in an abdominal cavity with contents of "chocolate" or dirty and green color (fig. 6). As the newborns' cavities of a small basin are not developed, ovary cyst may be defined rather highly with fingers, imitating enterokists and being rather mobile. According to the histologic WHO classification (Geneva, 1977) ovary cyst belongs to tumor formation. According to A.A.Gumerov [3], newborns' ovary growths appear in 1,2% of cases. The swelling formations (false tumors) which grow at the expense of accumulation (retention) of liquid are more often found in a follicle cavity. The high content of a chorionical gonadotrophin in the organism of mother plays a great role in formation of newborn's and fetus' cysts [4]. Spontaneous regression of ovary cysts appears among 25 – 50% of newborns [4,6]. Tactics of treatment of ovary swelling formations depends not only on the sizes and structure of cysts, but also on the existence of complications (hemorrhage in a cyst cavity, a necrosis, self-amputation, torsion). The indication for expeditious

treatment of newborn's ovary cysts are: formation existence of 30 mm in the diameter and more, ultrasonography identification of a dispersed suspension in a formation cavity, detection of a soft or solid component that points to dermoid genesis of formation. Emergence of a suspension or soft component is regarded as a number of complications – hemorrhages, an apoplexy or a necrosis that is confirmed with operational finds. Our investigation confirmed that 30% cases of newborn's cysts were with overwinds (torsions). Histologically verified follicular and serous cysts are more often stated.

3 patients weren't operated: 2 patients because of seriousness and extensiveness of defeat by malignant process (an adrenal gland neuroblastoma with metastasises in a liver, hepatoblastoma, occupying both shares of a liver) and the newborn with liver hamartoma after an formation biopsy with the hydrothorax.

The lethality among newborns with tumor pathology of internals made 7,6%: the patient from a hamartoma liver, the newborn in the early postoperative period after a hemigepatectomy for hepatoblastoma and the prematurely born child with sacrum and coccyx teratoma of big sizes which has become complicated by second degree intra ventricular haemorrhage after operation

Conclusions

1. According to our data the newborns' tumors and swelling formations are revealed in 10% of cases among surgical pathology of the neonatal period.
2. Ovary formations (36%), sacrum and coccyx area teratomas (15%), lymphangiomas of various localization (15%), formations of a liver (15%), peritoneal tumors (13%) are more often diagnosed.
3. In 18% of cases the pathology carries malignant character, is more often at new growths of peritoneal space (57%) and a liver (43%).
4. Early antenatal diagnosis of newborns' tumor formations of ovary, ultrasonography detection of complication signs allows to choose the right tactics of treatment, to carry out the surgery in time and to preserve ovary tissue at most giving the girls a chance of future reproductive function.
5. The lethality among newborns with tumor pathology made 7,6% according to our data.

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