Prenatal Diagnosis of Teratoma of The Neck By Using 2 and 3 Dimensional Ultrasound; A Case Report

İki ve Üç Boyutlu Ultrasonografi ile Prenatal Tanı Konan Servikal Teratom; Olgu Sunumu

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Özet

Anahtar Kelimeler
Prenatal Tanı; Servikal Teratom; Ultrasonografi

Abstract
Teratomas originate from the 3 germ layers, the endoderm, mesoderm and ectoderm, with varying rates of involvement. Congenital teratoma, observed in approximately 1:20.000-40.000 live births, are very rarely located in the area of the head and neck and the majority are benign malformations. The main cause of morbidity and mortality from cervical teratoma is the tumor size and its compression of the airway. This pathology may require emergency intervention postpartum and if not treated mortality-morbidity may be high. As a result prenatal diagnosis and monitoring is very important. Here we present the case of a cervical teratoma, prenatally diagnosed on 2- and 3-D (dimensional) ultrasound, which required an emergency operation postpartum due to development of respiratory distress.

Keywords
Prenatal Diagnosis, Teratoma of the Neck, Ultrasonography

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Introduction

Teratoma, a benign tumor rooted in two or three germ layers, is rarely seen in the cervical region. These tumors are most frequently seen in the prenatal period on the ovaries, testes, anterior mediastinum, retroperitoneal space, head and neck region followed by the sacrococcygeal region [1, 2, 3]. In the literature, while there are known cases of newborn and childhood cervical teratoma, there is limited imaging and information about fetal cervical teratoma. Our case emphasized the necessity of prenatal cervical teratoma diagnosis and a multidisciplinary approach to these cases. Sonographic cervical teratoma diagnosis during antenatal monitoring and successful postnatal treatment of a congenital cervical teratoma case is presented with two- and three-dimensional sonographic images.

Case Report

A 29-year old primigravida pregnant woman was referred to our clinic from an external center. The patient had no history of intermarriage or anomalous fetus. The patients’ obstetric history did not include any drug except the use of folic acid or iron preparations. Obstetric ultrasonography showed the fetus, appropriate for 23 weeks according to biometric readings, had a 38x57 mm mass in the cervical region on the left lateral side at the level of the parotid gland starting inferior and extending to the supraclavicular area. Within the heterogeneous mass lesion, hyperechogenic areas with distinct borders between 8 to15 mm in size were observed (Figure 1a). Hyperechogenic solid areas observed on ultrasonography were thought to be appropriate for fat. Within the mass millimetric echogenic areas thought to be calcified nodules were present (Figure 1b). A 3D ultrasound images showed the location of the tumor to be the left posterior neck (Figure 2). The lesion, with lobular contours, was in close proximity to the main neck veins. However on Doppler US the main veins of the neck were seen to be clear. In addition to prenatal ultrasound polyhydramnios was present and the stomach was not visualized.

Anomaly scanning showed no other anomalies in the fetus. The family was informed of the mass and possible diagnosis (cervical teratoma). With the permission and according to the wishes of the family the fetus was monitored closely until term, with no further complications developing.

A 3-D ultrasound near term indicated the possibility that the mass may cause birth dystocia. Additionally keeping in mind the possibility that emergency resuscitation and intubation may be necessary, the patient was referred to the pediatric surgery for a possible cesarean birth. A 29-pound baby was born in the 39th week of pregnancy. When the fetus developed respiratory distress in the early postpartum period it was immediately in the intensive care unit of the pediatric surgery and the tumor mass was excised under emergency conditions. The pathology indicated a mature teratoma.

The differential diagnosis of prenatally diagnosed fetal neck masses are cystic hygroma, congenital goiter or other thyroid masses, thyroglossal duct, bronchial cleft cyst, cervical hemangioma and cervical lymphangioma. Prenatal sonography is good at identifying the actual tumor. Differential diagnosis of these lesions with sonography is generally difficult or may be impossible. Cystic components may be dominant, in which case it is difficult to distinguish from cystic hygroma [5].

In the antenatal diagnosis and monitoring stages ultrasonography has indispensable importance in estimating prognostic determination of time and form of birth. In the early weeks of pregnancy while 2-D US is the most important method to identify masses, 3-D US is frequently used in complementary fashion. However, a variety of studies have stated that the development of 3-D US has provided important contributions to identifying the location, size, and shape, especially, and relationship to surrounding structures [2].

Prenatal MR is accepted as a useful complementary tool to evaluate congenital teratoma. MRI has greater tissue contrast resolution and allows detailed evaluation of the relationship of the mass to surrounding structures and the airway, and the fat or calcification content [6]. Correct diagnosis can be made with sonographic examination in the perinatal period. Imaging methods, while helping early diagnosis, are very important in planning the birth and postpartum management of cases. One third of prenatally diagnosed cervical teratoma will be accompanied by secondary polyhydramnios due to the pressure of the tumor on the esophagus preventing the fetus from swallowing amniotic fluid [5]. The main cause of morbidity and mortality from cervical teratoma is the tumor size and its compression of the airway. Fetuses have a much lower survival rate than neonates, 23% versus 85%. Ten percent of the fetuses are stillborn [7].

In the prenatal period teratoma in the cervical region can compress the trachea and esophagus leading to polyhydramnios. As a result during prenatal monitoring the stomach should be evaluated on ultrasound and imaging the stomach is very important [8]. In our case on prenatal ultrasound polyhydramnios was present and the stomach was not visualized.

Without intervention at the moment of birth, postnatal mortality may result due to the pressure of the teratoma in the head.
and neck region on the larynx and main airways. For this reason prenatal diagnosis is extremely important to ensure the birth take place at a center with appropriate facilities. Intubation and stabilization immediately after birth by endotracheal intubation or tracheostomy reduces mortality by an important rate. Three-dimensional imaging systems provide information on the anatomical appearance and size of the mass, helping to direct the choice of birth method.

Mohanty et al. in a published case reported that before operations it is unknown whether chemotherapy or radiotherapy treatment is required and stated that if fear of bleeding is not present biopsy may be completed and treatment can be designed according to histopathology results [9]. However in our case acute respiratory distress developed postpartum requiring emergency surgery and no biopsy was taken. Our cases of microscopic examination of excised specimen of this case showed a well-defined organoid structures arranged in disorganized manner, suggestive of mature teratoma. As a result after treatment by surgical excision, without RT or CT full recovery was ensured. No recurrence was observed on follow-up.

**Conclusion**

Due to the location of congenital cervical teratoma, airway compression may cause fetal or neonatal death and may require emergency intervention. Correct prenatal diagnosis is very important to plan treatment strategies. Prenatal diagnosis and monitoring is very important to ensure a multidisciplinary team is ready after birth to provide appropriate intensive care and if necessary emergency operation conditions.

**Competing interests**

The authors declare that they have no competing interests.

**References**