A case of recurrent short rib polydactyly syndrome
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Objective
Short rib polydactyly syndrome (SRPS) is a heterogeneous group of rare, autosomal recessive, lethal chondrodysplasia syndrome. The characteristics of SRPS are a narrow thorax with horizontally oriented short ribs, short limbs, polydactyly and can include multiple internal malformations, e.g., renal cysts, cardiovascular defects, anal atresia, urogenital anomalies, cleft lip, and cerebral malformations. There are four distinct types: type 1 (Saldino-Noonan), type 2 (Majewski), type 3 (Verma-Naumoff), and type 4 (Beemer-Langer). In type 2 (Majewski) ovoid tibiae shorter than fibulae are typical. The different subtypes are variably expressed and the clinical phenotypes overlap in the separate subtypes.

Methods
Clinical manifestations in the fetus are (a) hydroptic appearance at birth; (b) facial features of prominent forehead, low-set and malformed ears, lobulated tongue, micrognathia, cleft lip/palate, and a short and flat nose; (c) extremely short and narrow thorax, with a protuberant abdomen; and (d) micromelia (particularly distally), with preaxial and/or postaxial polysyndactyly, brachydactyly, and hypoplasia or aplasia of nails. Other reported anomalies include dry skin, cystic kidneys, genitourinary anomalies, pancreatic fibrosis, gastrointestinal tract and brain anomalies (arhinencephaly, vermis hypoplasia, arachnoid cyst, cerebral dysgenesis), hypoplastic epiglottis, larynx and cardiovascular anomalies (atrial septal defects). Death occurs in the perinatal period. A 31-year-old, gravida 5, para 3, woman was referred in week 22 of gestation from prenatal diagnostic center Erfurt to our center with diagnosis of SRPS of the fetus. Anamnestic, a previous pregnancy was terminated after 16 weeks of gestation following diagnosis of SRPS.

Results
Ultrasound findings in this pregnancy showed hypoplastic thorax with short ribs, short limbs, and left heart hypoplasia. Prenatal diagnosis in the former pregnancy shows the karyotype 46, XX. The molecular genetic analysis of DYNC2H1 revealed two unclassified homozygous changes c. 5837A>G (p. Gln1958Arg) and c. 10220G>A (p. Arg3407Gln). Following molecular genetics analyses of the parents confirmed, that both parents are carrier of heterozygous changes in DYNC2H1.

Conclusion
The ultrasound examination of the current pregnancy at our center revealed a second time almost all criteria of SRPS. Short ribs and narrow thorax, polydactyly, extreme shortness of the long tubular bones, and left heart hypoplasia, and micrognathia were observed. Amniocentesis revealed a normal female karyotype 46, XX. Molecular genetic test in fetal DNA repeatedly showed homozygosity for the mutations c. 5837A>G and c. 10220G>A in DYNC2H1. Contamination of fetal DNA with patient’s DNA was ruled out using a microsatellite analysis. The pregnancy was terminated in week 22 of gestation.