The corpus callosum (CC) is the largest commissure of the brain, consisting of white matter connecting the two cerebral hemispheres. The following parts can be distinguished within its structure: the body of the corpus callosum, splenium, trunk, genu, rostrum, and rostral lamina. It facilitates the transfer of information between the right and left hemispheres. Ultrasonographic assessment can reveal complete or partial agenesis of the corpus callosum. Complete or partial agenesis of the corpus callosum is frequently associated with intellectual deficits and a wide range of cognitive, behavioral, and neurological consequences. The aim of this study was to analyze the prevalence of corpus callosum abnormalities in singleton pregnancies between 22 and 34 weeks of gestation in the population of pregnant women from the Kuyavian-Pomeranian Voivodeship.

The study aimed to:

1. Determine the presence or absence of the corpus callosum (CC) in fetuses.
2. Identify ultrasonographic markers useful in diagnosing corpus callosum abnormalities in fetuses.
3. Assess the well-being of fetuses and neonates with corpus callosum abnormalities compared to a control group.

The study was prospective and included patients hospitalized at the Department of Obstetrics, Women's Diseases, and Gynecologic Oncology at University Hospital No. 2 named after Dr. J. Biziel in Bydgoszcz. Observations were conducted during 2020-2021, involving 106 patients. The patients included in the study were admitted to the pathology of pregnancy ward due to various pregnancy complications. All women underwent fetal ultrasonographic examinations and obstetric anamnesis.

The study group consisted of pregnant women in whom ultrasonographic examination of the fetus suggested corpus callosum abnormalities. This group included 10 pregnant women (9.4%), among which 7 cases involved suspected complete agenesis of the corpus callosum, and 3 cases involved suspected partial agenesis. The control group consisted of patients whose ultrasonographic fetal examinations confirmed the presence of the corpus callosum.

Based on the conducted study, the following conclusions were drawn:

- In the studied sample, 9.4% of fetuses exhibited corpus callosum abnormalities. Among these cases, 70% involved complete agenesis, while 30% involved hypoplasia of the corpus callosum.

- The proportion of abnormalities detected during fetal ultrasound was significantly higher in the pathological group compared to the control group, indicating a greater risk of developmental anomalies in these fetuses.

- Significant differences were noted in the length of the corpus callosum relative to fetal cranial dimensions between the pathological and control groups. Additionally, the pathological group demonstrated an elevated head circumference index considered normal for gestational age based on centile charts, suggesting potential developmental abnormalities.

- The presence of the cavum septi pellucidi was significantly lower in the pathological group compared to the control group. The pathological group also exhibited significantly shorter lengths and wider widths of the cavum septi pellucidi, which may indicate developmental abnormalities.

- Reduced pulsatility indices in the umbilical artery and anterior cerebral artery were more frequently observed in the pathological group, suggesting hemodynamic disturbances and an increased risk of fetal complications. Additionally, shortening of the pericallosal artery, a branch of the anterior cerebral artery, was significantly more common in the pathological group.

- Ultrasonography (USG) demonstrated 100% correlation between prenatal and postnatal findings, making it a highly reliable and cost-effective reference method. Magnetic resonance imaging (MRI) serves as a valuable second-line diagnostic tool, particularly for postnatal assessment.