20th World Congress in Fetal Medicine

A case of Osteogenesis imperfecta with overalap of Ehlers-Danlos syndrome

Sinska A, Trumpesova J, Pilka R
Department of Obstetrics and gynaecology, University hospital Olomouc, Olomouc, Czechia

Objective

Osteogenesis imperfecta (OI) is a group of conditions, which shares an etiology related directly or indirectly to type I collagen mutations. The most common clinical features of OI include bone fragility and deformity, and growth deficiency. Dominant mutations in collagen type I (encoded by COL1A1 and COL1A2 genes) are generally stated to be responsible for 90% of cases. The Ehlers-Danlos syndrome (EDS) is a group of clinically genetically heterogeneous connective tissue disorders. Skin hyperextensibility and joint hypermobility are the clinical signs of EDS. Vascular type of EDS is characterized by the presence of a thin, translucent skin, a remarkable vascular fragility that leads to spontaneous rupture of blood vessel walls or aneurysm formation. According to Orphanet the combination of EDS and OI is very rare (> 1/1,000,000) and it is not included in the 2017 International classification of EDS.

Methods

We present a case of pregnancy in 19-years old woman previously diagnosed with COL1A2 mutation and phenotype of OI/EDS overlap syndrome. Only a few cases of OI/EDS have been described and to our best knowledge this is a first published case of pregnancy in OI/EDS overlap syndrome.

Results

Our patient was born in 2002 and was suffering from various medical conditions (joint hypermobility, spontaneous luxations) since her early childhood. She was referred to genetic consultation and her consultant was very suspicious of EDS, however genetic testing for EDS was not available in Czech Republic at that time (2007), so the echocardiographic examination was recommended. The exam showed an atrial septal defect and a dilatation of aortic isthmus therefore she had been referred for thoracic of magnetic resonance imaging (MRI). In 2009, patient underwent the MRI examination with the finding of dilatation of ascendant aorta. With two fractures occurring after only a mild trauma and finding of aortal dilatation patient was referred to genetic consultant once again with the suspicion of OI/EDS overlap syndrome. Finally, in 2014 heterozygous mutation in COL1A2 gene (responsible for encoding alpha chain of type I collagen) was identified, patient inherited this mutation from her asymptomatic father. From 2016 to 2018 patient suffered of 4 more fractures (femurs, metatarsal) and had to undergo spine stabilisation and posterior lumbal interbody fusion (PLIF) due to dysplastic spondylolisthesis. Regular check-ups with cardiologist showed progression in aortal dilatation: + 4 mm in 2018 and + 3 mm in 2020. Patient was strongly discouraged from becoming pregnant. She was referred to our clinic in 2022 – in her 17th week of pregnancy. Her 1st trimester screening (including screening for preeclampsia and fetal growth restriction) and fetal anomaly scan in 20th week were both negative. An amniocentesis and prenatal genetic consultation were performed. She was taking low molecular weight heparin (LMWH) since 20th week due to her previous history of thrombosis. She was instructed to measure her blood pressure regularly and to keep the blood systole under 130 mmHg. Fetal growth restriction (early form, mild placental insufficiency) was diagnosed in her 30th gestational week. Caesarean section was scheduled for 36th week with cooperation of cardio surgeon, anaesthesiologist and obstetrician. Planned caesarean section was performed in 36th gestation week. Prior to the surgery echocardiography was performed, an epidural catheter, radial artery catheter and central venous catheter were all secured. The surgery itself was uncomplicated. Approximately 48 hours after the surgery, patient started to complain about blunt pain on her chest, worsening with inspirium. Cardiologist performed an electrocardiography (ECG) and bed-side echocardiography, no progression in aortal dilatation was noted. The discharge of the patient was scheduled on 5th day following the surgery. Few minutes before the discharge, patient called for nurse complaining of sudden strong pain on her chest and dyspnoea. She was pale and hemodynamically unstable, oxygenotherapy was started and emergency team called. Her condition progressed to cardiac arrest within few minutes and CPR was initiated. Bed-side echocardiography showed absence of cardiac activity and presence of thrombus in right ventricle. The CPR team came to mutual consensus to connect the patient to extracorporeal membrane oxygenation (ECMO). During the preparation for ECMO, transoesophageal echocardiography revealed complete Stanford type A aortal dissection. Due to its inauspicious prognosis the CPR was terminated after 90 minutes.

Conclusion

Women with EDS are at increased risk of various complications during their pregnancies, however with a wide range of phenotypes approach to their pregnancies may vary. Patients with classical or hypermobile variant of EDS may have less complications and usually tolerate the pregnancies better. Special care should be taken for women with vascular type – they should undergo preconceptional counselling and be advised against pregnancy. Our case has attempted to highlight the potential obstetric complications and to attract the attention of clinical physicians to the rare but extremely dangerous syndrome.