Pregnancy and delivery in Ehlers-Danlos syndrome type V

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Summary

Ehlers-Danlos syndrome (EDS) is a hereditary dysplasia of connective tissue with an abnormal collagen synthesis. It is characterized by hyperelasticity and fragility of the skin, joint hyperlaxity and fragility of the blood vessels. We describe the problems reported during pregnancy and delivery in women with EDS. Our patient had a type V syndrome. Accurate monitoring during the course of pregnancy is necessary. We believe cesarean section more appropriate than vaginal delivery in order to avoid the risks related to the rupture of the pelvic and perineal vessels which may be difficult to suture.

Key words: Ehlers-Danlos syndrome, Pregnancy.

Introduction

Ehlers-Danlos syndrome (EDS) is an inherited disorder of the connective tissue caused by a genetic defect collagen biosynthesis [1]. Beighton *et al.* have classified the EDS in 9 types (corresponding to different molecular and enzymatic defects in collagen – Tab. 1) based upon clinical findings and mode of inheritance [2]. Since collagen is ubiquitous, every organ is likely to be involved. Common features in the 9 types described by Beighton are marked joint laxity, hyperextensible, fragile skin, vessel fragility and poor wound healing. The EDS is therefore not a single homogeneous disorder but a group of related entities that share, in varying degrees, the same complex of clinical anomalies. Type V EDS is an X-linked recessive form with skin hyperextensibility much like EDS type II, but joint mobility and bruising are not prominent features. In most patients the biochemical cause is unknown, but a few have a deficit in lysyl-oxidase [3].

The incidence of pregnancy associated with EDS is of 1/25,000-1/150,000 newborns [4, 5]. The scientific relevance of the disease and the issues of pregnancy and delivery management in women with EDS have induced us to describe a case we have treated.

Case Report

A 27-year-old patient, D. A., primigravid at 9 weeks' gestation, with EDS type V, presented to the high-risk pregnancy day-hospital of our department for a control.

EDS diagnosis was formulated in her early teens by a team of geneticists and physicians of the Faculty of Medicine 'Federico II' of Naples.

Physiological anamnesis was normal. Past history showed common exanthematic diseases, skin fragility following minor traumas, and difficult healing. At clinical examination the patient showed marked skin elasticity, joint laxity and several 'cigarette paper' scars on the anterior surface of her knees and tibial and peroneal malleoli.

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Laboratory examinations were all within the normal range, but there was a slight increase in APTT.

We monitored the patient during the gestation period with monthly ultrasound and clinical examinations. Amniocentesis for the study of cariotype was not performed since the patient did not give her consent. At 39 weeks' gestation a cesarean section with a Pfannenstiel cutaneous incision was performed in order to avoid perineal and vaginal tears and haematomas. During the cutaneous incision it was evident that there was poor resistence to the scalpel; the laparotomic breach, during the extraction of the fetal head, widened spontaneously nearly 3 cm. on each side. The same fragility was present at the incision of the muscular fascia, the peritoneum, the lower uterine segment and the arciform and decidual vessels.

The hysterotomic incision was sutured with nonadsorbable material (Vicryl 2) in a continous single-layer, achieving in this way a good hemostasis. The patient delivered a 3000 g. male infant with Apgar scores 9 and 10 at 1 and 5 min., respectively. The placenta was normal. The skin was sutured with single stitches in Vicryl 2 which were removed on the 12th postoperative day. The postoperative course was normal.

Comment

EDS is characterized by 4 main features: 1) Skin hyperelasticity: 'cutis hyperelastica'. 2) Skin fragility: large wounds, difficult to suture. 3) Joint laxity: ciphoscoliosis, luxations. 4) Vessel fragility: epistaxis, hematomas, great vessel fragility (especially in type IV) and by multiple visceral lesions: ocular, digestive, cardiac, pulmonary. Skin biopsy shows hypoplasic collagen or fibroblastic anomalies. Delivery and postpartum: premature membrane rupture occurs more frequently [4, 6, 7]. Vaginal delivery may lead to great complications. Severe perineal, cervical, ureteral, vesical and gut lesions, with enlarging hematomas may be observed [8, 9]. Sutures are complicated by difficult and delayed healing. Hemorrhage is determined by the rupture of the pelvic vessel due to labour contractions. Labour, moreover, may cause the rupture of great vessels (aorta, vena cava, Willis' poligon) which may occur especially in EDS type V, in which the greatest vascular fragility is present. All these complications may result in significant maternal mortality which

Table 1. — *Classification of EDS based on clinical manifestations and mode of inheritance*

Type*	Joint hypermobility	Skin extensibility	Fragility No.	Bruisability No.	Other classifications	Inheritance §
I	Marked	Marked	Marked	Marked	Skin characteristically soft, velvety; cigarette-paper scars; hernias; varicose veins; premature birth because of rupture of fetal membranes	AD
II	Moderate	Moderate	Absent	Moderate	Milder than type I	AD
III	Marked	Minimal	Minimal	Minimal	Joint dislocations with minimal changes in skin	AD
IV	Small joints only	Minimal	Marked	Marked	Rupture of large arteries and bowel; thin skin with prominent venous network; characteristic facies in some	AD or AR
V	Moderate	Moderate	Absent	Moderate	Similar to type II	XL
VI	Minimal	Moderate	Moderate	Moderate	Similar to type II; intramuscular hemorrage or keratoconus in some	XL
VII	Marked	Moderate	Moderate	Moderate	Multiple dislocations	AR or AD
VIII	Moderate	Moderate	Marked	Moderate	Advanced periodontitis; atrophic pigmented scars of skin	AD
IX	Mild	Mild	Absent	Absent	Bladder diverticuli with spontaneous rupture; hernias; skeletal abnormalities; skin laxity	XL

*Alternative designations: type I, gravis; type II, mitis; type III, benign familial hypermobility; type IV ecchimotic or aortic; type V, X-linked; type VI, ocular, type VII arthrochalasis multiplex congenita; type VIII, periodontal form; type IX, EDS with abnormal copper metabolism, Menkes's steely-hair syndrome (some variants) and cuits laxa (some variants).
§ AD, autosomal dominant; AR, autosomal recessive, XL, X-linked

may be as great as 25% [10-12]. Uterine rupture may occur in repeated cesarean sections [13].

There is controversy about the best type of anesthesia. The orotracheal intubation may cause glottis' hematoma and hemorrage. The positive pressure ventilation may cause a pneumothorax vascular rupture [14-16]. Hemorragic risks of the vertebral foramen are possible in regional anesthesia [13]. In postpartum few problems have been observed apart from poor healing. In the long-term, uterine prolapse and inversion have been reported [15, 16]. Non-absorbable material must be used for surgical suture [4].

In our case the pregnancy progressed satisfactorily with a favourable outcome for both mother and infant according to the risks reported in the literature.

From the analysis of amniotic fluid in women with EDS it has been demonstrated that maternal transmission is often recessive [2], as in our patient whose baby did not show any signs of the disease.

Patients with EDS must undergo complete investigation: accurate history, genetic counselling of the patients and their relatives, and clinical examination in order to evaluate the type of disorder and its prognosis.

In spite of the good outcome achieved in our case, pregnancy in a patient with EDS should be considered as high risk and therefore it should be accurately monitored. As far as delivery is concerned we prefer cesarean section to vaginal delivery to prevent great lacerations of the perineum and pelvic and/or abdominal structures which are difficult to suture.

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