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# Food-dependent exercise-induced anaphylaxis during pregnancy

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## SHORT CASE REPORT

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## Pregnant women with rare comorbid diagnoses need a safe delivery plan. This case report describes labour and delivery in a patient with food-dependent exercise-induced anaphylaxis.

A primipara in her thirties with known food-dependent exercise-induced anaphylaxis (FDEIA) was referred by her general practitioner in week 22 of pregnancy for pre-birth planning, including assessment of the indication for an elective caesarean section.

Over the course of her lifetime the patient had had one episode of anaphylaxis that had begun during exercise, and two that had occurred while eating after physical activity. The first episode occurred when she was in her late teens. She had been eating pizza approximately 60 minutes after strenuous exercise when she developed swelling in her throat and acute diarrhoea. She was treated with adrenaline, antihistamines and corticosteroids. During the second episode, she developed generalised urticaria while

jogging. Upon examination by the out-of-hours primary healthcare service, she felt nauseated and had neither a palpable pulse nor measurable blood pressure. Shortly afterwards, she syncope. She was deemed to be in anaphylactic shock and received the same treatment as for her first episode. The third attack, which occurred seven years ago, took place while she was eating crispbread after intercourse. She developed generalised urticaria and was treated with antihistamines and corticosteroids by the out-of-hours healthcare service. Based on her symptoms, she was diagnosed with FDEIA.

She had previously undergone skin patch testing and allergy serology, but without positive results for any specific foods. Following her diagnosis, she had been careful to avoid strenuous exercise, and she also avoided eating after physical activity or intercourse. She carried an EpiPen with her at all times but had had no further attacks since her diagnosis and used no regular medication.

She attended her first consultation with us in week 26 of pregnancy. The pregnancy had thus far been uncomplicated, and examination revealed a non-anomalous fetus with normal growth. The obstetrician performing the examination was unfamiliar with FDEIA and made the following plan: review the literature to determine whether the patient could have a vaginal delivery (and if so with what precautions), adopt an interdisciplinary approach by working with the anaesthesia department, and arrange another appointment at our outpatient clinic for week 36 of pregnancy.

In week 29, the patient experienced another episode of generalised urticaria. She had experienced psychological stress beforehand but had not engaged in any physical activity. The reaction occurred shortly after eating. She was treated with antihistamines in the out-of-hours primary healthcare service and was discharged with decreasing symptoms after three hours of observation.

At a follow-up appointment in week 36, and in consultation with the patient and the anaesthesiologist, a birth plan was prepared on the basis of the available literature. There was little information available regarding childbirth in this patient population. However, for our patient it was thought that a caesarean section would also be stressful for the body and would not reduce the risk of an anaphylactic reaction compared to a vaginal delivery. A vaginal delivery was therefore planned, with steroids and antihistamines to be administered at the start of labour, and the delivery room to be kept in a state of emergency preparedness for treatment of anaphylaxis. The anaesthesiologist on duty was to be notified of the patient's admission and would monitor the patient with a view to administering early epidural anaesthesia if required. Once labour was underway, the patient would be kept in a fasted state with glucose infusion to be considered in the event of an extended labour. The aim would be to keep the active pushing stage as short as possible and to exercise restraint in the use of oxytocin.

At follow-up appointments, no indication was found for early induction of labour (i.e. prior to week 42 + 0). The day before the scheduled induction, the patient came to the hospital with spontaneous contractions. Intravenous glucocorticoids (Solu-Cortef 100 mg) and oral antihistamines (cetirizine 10 mg) were administered as planned, followed by an epidural the same afternoon. The patient received glucose infusion during the first stage of labour.

The first stage proceeded normally with reassuring findings from fetal monitoring. However, over the next two hours, there was no further descent of the head through the birth canal. The fetal head was below the ischial spines. The fetal heart rate had now

become abnormal due to a slight increase in the rate, but fetal scalp lactate testing was not deemed necessary. The attending gynaecologist considered there to be three options: administer oxytocin in the hope of achieving stronger contractions and further descent of the head; begin active pushing; or perform an assisted delivery.

It was decided to proceed directly with assisted delivery, as this would entail the least physical stress for the patient and thus the lowest risk of anaphylaxis. To minimise the risk of an anaphylactic reaction in association with active pushing, it was decided to perform a forceps rather than vacuum delivery. Forceps delivery does not require active pushing by the woman.

The infant was delivered over four contractions in an uncomplicated forceps delivery and had normal blood gas values and Apgar scores. An atonic postpartum haemorrhage of 1300 mL occurred, which stopped following administration of 5 IU intramuscular oxytocin and intravenous oxytocin infusion (50 IU in 500 mL NaCl, 150 mL/h). The patient did not experience an allergic reaction in association with the birth.

After the delivery the patient's general condition was good. She was given food in the delivery room around one hour post-delivery and was then observed for three hours before being transferred to the maternity ward. She received two units of red blood cells (SAG) in the maternity ward owing to a symptomatic fall in haemoglobin to 7.6 g/dL the day after the birth but had no further complications.

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## Discussion

FDEIA is a condition in which food intake shortly before or after exercise/physical activity can trigger an anaphylactic reaction (1, 2). The condition is rare, and prevalence in Norway is unknown. A Japanese study in adolescents found a prevalence of 0.017 % or 0.048 %, depending on the diagnostic criteria used (3). If these figures are applied to Norway, they suggest that 10–30 patients with this condition give birth in Norway each year (assuming that they conceive at the same rate as the general population). In our experience, the condition is less common than this, or it may be underdiagnosed.

As the association between food intake, physical activity and allergic reactions can be difficult for both the doctor and the patient to recognise, diagnosis is often delayed. The underlying pathophysiological mechanism is unclear. Histamine release from mast cells probably plays a key role (1, 3, 5). There is no robust evidence base to support any medical prophylaxis. Chromoglycate may possibly have an effect (4), while antihistamines may also be worth trying (5). Misoprostol may possibly be effective (6), but is not suitable for pregnant women, as it can induce labour. Chromoglycate and various antihistamines are safe to combine with both pregnancy and breastfeeding.

Preventive treatment for patients with FDEIA otherwise consists of avoiding strenuous physical exercise and food intake after physical activity (1). There is little evidence in the literature regarding childbirth in this patient population, but case reports on childbirth and exercise-induced anaphylaxis describe success with similar protocols involving steroids and antihistamines in the first stage of labour (7, 8).

This case report illustrates the importance of collaboration across specialties and of careful pre-birth planning in pregnant women with complicating factors. In this way, we can hopefully help as many of our patients as possible to have a normal labour and delivery.

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*The patient has consented to the publication of this article.*

*The article has been peer-reviewed.*

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Publisert: 5. August 2022. Tidsskr Nor Legeforen. DOI: 10.4045/tidsskr.21.0832

Received 29.11.2021, first revision submitted 8.2.2022, accepted 21.4.2022.

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