

Mamma Mia, Recurrent anaphylaxis eating pasta: A case report and review of Wheat-dependent exercise induced anaphylaxis in paediatrics

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Introduction

Wheat-dependent exercise-induced anaphylaxis (WDEIA) is a form of severe allergic reaction, which occurs typically 1 to 4 hours after wheat ingestion combined with exercise. The clinical features varies on the severity. Within the paediatric population, WDEIA is rare.



Case Description

A 14-year-old girl presented with lip discomfort, generalised body rash, difficulty breathing and later collapsed after running on the beach. Prior to the incident, she ate a meal consisting of wheat pasta with tomato sauce and garlic bread. The ambulance crew had administered treatment of IM adrenaline and IV chlorphenamine with good clinical response. She represented with 3 further similar episodes in subsequent months all relating with meals containing pasta. She can tolerate wheat containing bread prior to her initial presentation. Pasta is made from durum wheat, which has higher wheat content than other types of common wheat species¹ (**figure 1**). She was seen in the Paediatric Allergy clinic. A skin prick test was negative. Her IgE to wheat was positive at 0.79. Her wheat component protein IgE were negative.

Wheat Species	Protein Content
Common wheat	9.6%
Spelt	11.3%
Durum Wheat	12.5 %
Emmer	11.1 %
Einkorn	11.6 %

Figure 1: Protein Content of Different common wheat Species

Literature review

- The pathophysiology of WDEIA is unclear. It is thought to be due to an increase in plasma histamine² and allergen absorption rate via the gastrointestinal tract associated with increase physical activity³.
- Symptoms are throat swelling, wheezing, breathing difficulties, fainting, urticaria, angioedema & vomiting.

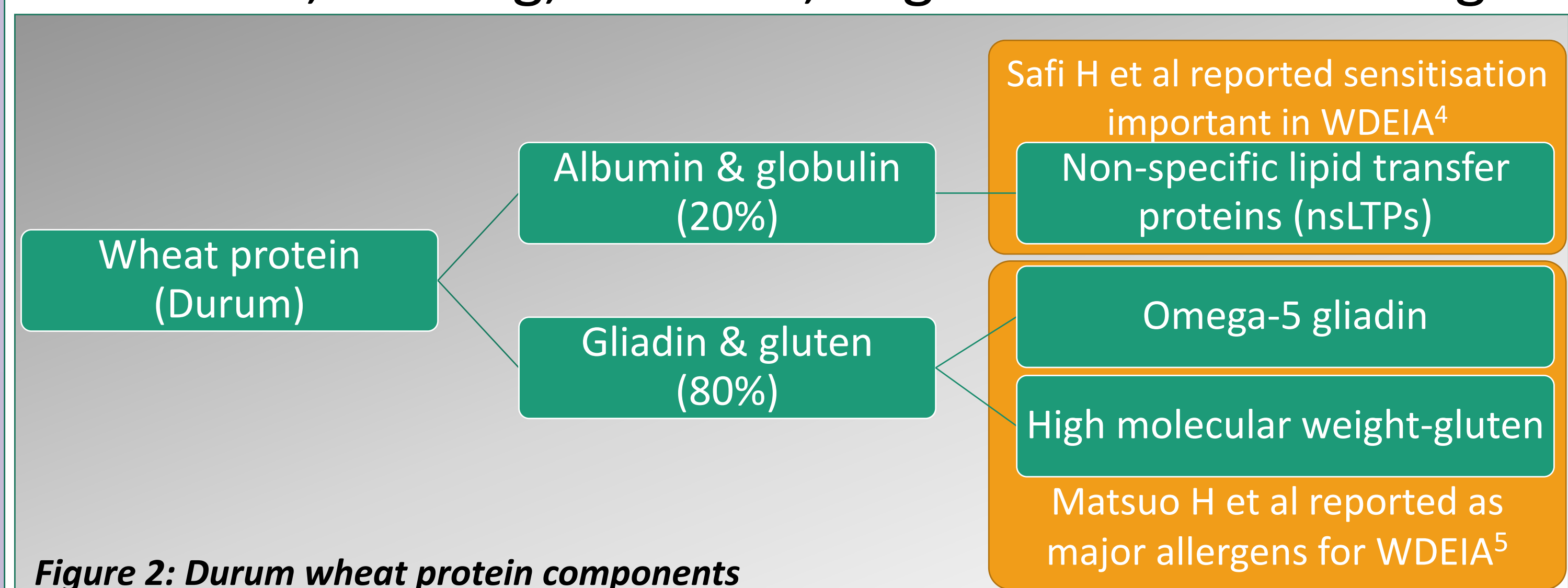


Figure 2: Durum wheat protein components

- WDEIA patients may have high specific IgE to component protein Tri tu 14 & Pru p 3 (nsLTP), omega-5 gliadin & HMW-gluten (**Figure 2**)^{4,5}.
- Exercise-food challenge test may aid in the diagnosis.
- Management: Avoiding exercise 4-6 hours post wheat ingestion, lowering intensity of exercise, carrying adrenaline autoinjector during exercise and referral to tertiary allergy services.⁶

Discussion

The high content of wheat protein in Durum wheat together with physical activity triggered recurrent life-threatening anaphylactic reactions in this case. Diagnosing WDEIA can be challenging. Suspected cases should be referred to the Paediatric Allergy specialist for clinical assessments and wheat IgE and component testing of specific allergenic wheat proteins. A wheat-free diet or avoiding strenuous physical activity following wheat consumption helps to reduce the occurrence of these anaphylactic reactions.

References

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