شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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قسم

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علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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HANAA ALY

Different Triggers of Anaphylaxis among Egyptian Children Attending Children's Hospital Ain Shams University

Thesis

Submitted for Practical Fulfillment of Master Degree in Pediatric

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Mousa Mohamed

List of Contents

List of Tables

List of Figures

List of Abbreviations

Abb.	Full term
AAAAI	American Academy of Allergy, Asthma and Immunology
ACE	Angiotensin-Converting Enzyme
ANOVA	Analysis of Variance
CNS	Central Nervous System
EAACI	European Academy of Allergy and Clinical Immunology
EAIs	Epinephrine Auto-Injectors
ED	Emergency Department
FA	Food Allergy
FcR	Fc Receptor
H1	Histamine1
ICON	International Consensus
IgE	Immunoglobulin E
IL13	Interleukin-13
IL4	Interleukin-4
MRGPRB2	Mas-Related G Protein–Coupled Receptor-B2
MRGPRX2	Mas-Related G Protein–Coupled Receptor-X2
NIAID	National Institute of Allergy and Infectious Diseases
NSAIDS	Non-Steroidal Anti-Inflammatory Drugs
OSCS	Over-Sulphated Chondroitin Sulphate
PAF	Platelet Activating Factor
SD	Standard Deviation
Th2 cells	Helper T cells
UK	United Kingdom
USA	United States of America
WAO	World Allergy Organization

INTRODUCTION

According to World Allergy Organization (WAO) anaphylaxis is defined as an acute, potentially life-threatening hypersensitivity reaction, involving the release of mediators from the mast cells, basophils and recruited inflammatory cells. It is defined by a number of signs and symptoms, alone or in combination, which occur within minutes to few hours, after exposure to a provoking agent ***(Simons et al., 2011).*** Anaphylaxis has sudden unpredicted onset; that reaches its peak within 5 to 30 minutes, and may, rarely, last for several days ***(Sánchez-Borges et al., 2019).***

One in 5 children has a second reaction within 24 hours of the initial episode which is called a biphasic reaction. To decrease the likelihood of biphasic reaction, epinephrine must be given as soon as the diagnosis is settled. Presentation of anaphylaxis is variable among persons and even in the same person among different attacks ***(Ninchoji et al., 2018).***

Reactions are typically uniphasic, however, in 0.4-15% of reactions they are biphasic in nature. The second phase usually occurs after an asymptomatic period of several hours (1-10h), but there may be a 24-hour delay. Protracted anaphylaxis may persist beyond 24 hours and their mortality rates are higher ***(Fischer et al, 2018).***

Diagnosis of anaphylaxis is mainly clinical. WAO diagnostic criteria are the most widely accepted defining criteria. To the time being, there is no available, accurate and rapid diagnostic biomarker for anaphylaxis ***(Sacco and Gonzalez-Estrada, 2018).***

Management of anaphylaxis is largely centered on resuscitation and administration of epinephrine ***(Sacco and Gonzalez-Estrada, 2018).*** Yet there is under treatment among a wide sector of junior medical staff, either due to lack of awareness about the diagnosis and the seriousness of anaphylaxis or due to lack of knowledge: when to give and when not to give epinephrine, the proper dose and the proper way of administration. Avoiding pitfalls in anaphylaxis diagnosis will help to establish rapidly effective treatment and would further reduce the rate of fatal event ***(Parenta and Massimo, 2018).***

Studying the patterns of anaphylaxis in our environment will certainly contribute to a better understanding of this disease, as well as to a clearer comprehension of regional differences in morbidity and mortality factors.

AIM OF THE WORK

This work aims at evaluating the pattern of anaphylaxis among children attending Children's hospital, Ain Shams University through identifying the frequency, underlying triggers and clinical presentation of anaphylaxis and the possible mistakes in diagnosis and treatment.

REVIEW OF LITERATURE

Anaphylaxis:

The first recorded episode of anaphylaxis was described in hieroglyphic recordings from 2640 BC as the cause of death of an Egyptian pharaoh after a wasp sting. A more modern description of anaphylaxis was at 1902 during immunizing dogs with jellyfish toxin. The injection of small amounts of toxin in some animals precipitated a rapid onset of fatal or near-fatal symptoms. The term 'anaphylaxis' was derived from the Greek roots 'ana' (backward) and 'phylaxis' (protection or immunity) ***(Chapman and Lalkhen, 2017).*** Allergies are a growing health concern with a significant impact on quality of life and healthcare costs. It is critical to develop an appropriate care plan to deal with children's allergies ***(Elhassan et al., 2017).***

Definition of anaphylaxis:

The European Academy of Allergy and Clinical Immunology (EAACI) Nomenclature Committee proposed that anaphylaxis is a severe, life-threatening, multisystemic hypersensitivity reaction. Traditionally anaphylaxis was used to describe immunoglobulin E (IgE) - dependent events and 'anaphylactoid reaction' was used for IgE-independent reactions although both of these reactions are clinically indistinguishable ***(Kim, 2018).***

Differences between anaphylaxis in adults and children:

Anaphylaxis occurs in all age groups, but most researches are focused on adults. Elicitors and clinical presentation of anaphylaxis in children and adolescents were shown to be different from those in adults, calling for specific research and targeted guidelines for pediatrics ***(Simons and Sampson, 2015).***

Apparently, triggers of anaphylaxis are different between children and adults. Drug-induced (especially non-steroid anti-inflammatory drugs (NSAIDs) and antibiotics), idiopathic, and food-dependent exercise-induced anaphylaxis are more frequent in adults whereas food components are the leading cause of anaphylaxis in children ***(Barzegar et al., 2010).***

Recommendations for the management of anaphylaxis are predominantly based on expert opinions and consensus. Evidence based guidelines were provided through WAO, American Academy of Allergy, Asthma and Immunology (AAAAI), EAACI and the National Institute of Allergy and Infectious Diseases (NIAID) ***(Garvey et al., 2019).*** Guidelines for adults and children stress on rapid diagnosis as being a key to optimal management, and management steps are almost the same in adults and children. Signs and symptoms of anaphylaxis for adults and children are summarized in table 1. Nevertheless,