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Incidence and Risk Factors of Brief Resolved Unexplained Events in Infants presenting to Pediatrics Department of Bab Elsharya University Hospital

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Abstract

Background: Infants who present with a history of an acute event (an unexpected change in an infant's breathing, appearance, or behavior), reported by their parent or caregiver, represent a heterogeneous group of patients of varying ages with diverse pathophysiology. A BRUE is diagnosed only when there is no explanation for the described event after a thorough history and physical examination.

Aim of the study: to detect the incidence of Brief Resolved Unexplained events and differentiate Risk Factors according to initial presentation of cases and follow-up.

Methods: Prospective application of BRUE criteria on infants younger than 12 months old who presented to emergency room of Bab El Shaaria University Hospital from 1 June 2018 to 1 December 2018. BRUE patients were classified into Lower-risk (LR-BRUE) and Higher-risk (HR-BRUE). History was taken from all caregivers and all patients underwent physical examinations and o2 saturation monitoring by pulse oximetry on room air. Studied infants were followed up 3 to 6 months after discharge either by regular visits or by phone.

Results: study included 2462 Infants below 1 years old, the inclusion criteria of BRUE met 39 patients (1.58%) 18 of them are males (46 %) and 21 are females(54%), 23 of BRUE cases classified as low

Risk BRUE(59%), and 16 cases as High Risk BRUE(41%) all were admitted for further investigations . prematurity was conducted in 9 cases (23%). The entire BRUE group was monitored by pulse oximetry for 4 hours, O2 saturation was above 90% in 36 cases (93%), while 3 cases (7%) were below 90% and all had been admitted for further assessment and investigations. The incidence of death was in 3 cases (8%) all of them was HR-BRUE. Recurrence occurred in 8 patients (10%) , 2 of them were initially classified as LR-BRUE. The most frequent diagnosis of HR-BRUE was pertusis in 4 cases (25%), GER in 3 cases (19%) and epilepsy in 2 cases (13%).

Conclusion: Diagnosis of BRUE represent 1.58 % of the studied cases, the risk of Recurrence is statistically significant in patient below 2 months old , preterm infants , infants with history of underlying diseases , and those whose O_2 saturation above 90%. While the Risk of death was statistically significant in infants with history of underlying diseases, History of NICU admission and those who's presented by high Risk BRUE.

Keyword: Brief Resolved Unexplained Events (BRUE)

Introduction

Clinicians should use the term BRUE to describe an event occurring in an infant <1 year of age when the observer reports a sudden, brief, and now resolved episode of ≥1 of the following:

• Cyanosis or pallor

• absent, decreased, or irregular breathing

• marked change in tone (hyper or hypotonia)

• altered level of responsiveness

Further recommendations were made for standardizing the diagnostic evaluation and a risk stratification algorithm for these infants. Among the recommendations for infants having experienced a lower-risk BRUE (LR-BRUE) was that a minimal diagnostic work-up was indicated and that follow-up in an ambulatory setting was permissible***(Tieder JS , et al , 2016)***

Most of the data informing this new guideline is from retrospective convenience samples, with few prospective studies. Evaluation of the new BRUE diagnostic criteria with well-characterized clinical populations having long-term follow-up are urgently needed to validate the new diagnostic and therapeutic algorithm.

The BRUE guideline also serves to standardize a comprehensive clinical history, physical examination, diagnostic testing for LR-BRUE and follow-up for future BRUE studies. Going forward, these data will enable the validation or modification of the newly proposed guidelines in an evidence-based manner.

Unnecessary diagnostic testing, hospitalization, and treatment adds considerable anxiety, risks, and costs. The BRUE guidelines have also generated considerable interest worldwide, ***(Piumelli R , et al , 2017 -***

Arane K, et al , 2017) however the efficacy and generalizability of the new BRUE diagnostic criteria have not been established.

The BRUE stratification recommendations are important to validate since lower risk of infants may need minimal diagnostic testing and do not require hospitalization, thus reducing health expenditure and parental anxiety.

A BRUE is diagnosed only when there is no explanation for the described event after a thorough history and physical examination. The presence of other features, for example respiratory symptoms or a fever, preclude the diagnosis and should prompt further assessment for a specific cause.

Ethical consideration:

• Written Parent consent for the study was obtained before the study.

• Approval of the local ethical committee in the pediatrics department, college and university were obtained before the study.

•The authors declared no potential conflict of interest with respect to the research & publication of this article.

•All the data of the patient & results of the study are confidential & the patient has the right to keep it.

•the authors received no financial support for the research &publications of the article.

Patients and Methods

The study is a prospective cohort study included 2462 Infants below 1 years old presented to emergency room of Bab Elsharya University Hospital from 1 June 2018 to 1 December 2018. Informed consents were obtained from all caregivers of patients.

All BRUEs patients fulfilled the following criteria:

- **Inclusion criteria:**

All patients below 12 months old presented by a sudden, brief (<1minute) and now resolved episode of one or more of the following:

- Cyanosis or pallor.
- Absence, decreased or irregular breathing.
- Marked change in tone (hypotonia or hypertonia)
- Altered level of responsiveness.

All diagnosed patients as BRUE was then classified into low Risk group and High Risk group

Low risk BRUE: Infants who have experienced BRUE are considered **low risk** if they have all of the following:

- Age >60 days
- Gestational age ≥32 weeks and postconceptional age ≥45 weeks
- Occurrence of only one BRUE (no prior BRUE, and BRUE did not occur in clusters)
- Duration of BRUE <1 minute
- No cardiopulmonary resuscitation (CPR) by a trained medical provider was required
- No concerning historical features
- No concerning physical examination findings

High Risk Group: The following characteristics were most consistently associated with **higher risk**:

- Infants < 60 days of age
- History of prematurity (gestational age ≤ 36 weeks old)
- History of more than one event
- Duration of BRUE > 1 minute
- cardiopulmonary resuscitation (CPR) by a trained medical provider was required .

- **Exclusion criteria:**
  - Patients above 12 months old
  - The patient known to have cardiac disease, epileptic disorder or chronic lung disease requiring treatment.
  - Any recent events was explained or reached the diagnosis through medical history, clinical examination.

Methods:

History was taken from all caregivers, and all patients underwent physical examinations and monitoring O_2 saturation. Studied infants were followed up 3 to 6 months after discharge either by regular visits or by phone to follow any new events, recurrence or sudden death.

1-Personal data:

Patient's name, age, sex, address and method of contact (Mobile or telephone numbers).

2-Thorough history taking:

Event description

Description of the colour, respiration, and muscle tone of the infant by his caregivers is very imperative. We had to differentiate central cyanosis from acrocyanosis (hands and feet). We asked about presence or absence of apnea..Also if the infant was limp or muscle tone was increased. Seizure like movements was evaluated. We had to ask about any resuscitation required or it was spontaneously resolved.

Past history

Detailed past history, include in pregnancy, birth condition neonatal period , medical or surgical problems.

Family history

Family history of other siblings with a BRUE, consanguinity, numbers of sibling , history of early unexplained deaths, genetic, metabolic, cardiac or neurological problems

Daily life conditions

We Asked about usual sleep conditions including sleep position ambient temperature and bedding materials. Events preceding the BRUE Knowing minor symptoms preceding the event including recent episodes of fever, illness, received medications, immunization or any change in daily life routine**.**

3-Full clinical examination:

Full clinical examination to assess general condition of patient and give clue for initial diagnosis including evaluations of the cardiac, respiratory, and neurological systems. It included:

- Vital signs with oxygen saturation.
- Measurement of height, weight, and head circumference.
- Respiratory examination of respiratory rate, pattern of breathing and breath sounds.
- Cardiovascular examination heart rate, murmur and pulse oximetry
- Examination for physical signs of trauma (bruising, subconjunctival or retinal hemorrhage, bulging anterior fontanel)
- Abdominal examination for distension or tenderness to exclude acute intestinal obstruction should be done
- Neurologic examination, including alertness, tone and reflexes.

- Inguino-scrotal examination to exclude testicular torsion or incarcerated inguinal hernia
- Developmental assessment, including assessment of neonatal reflexes
- An observation period, especially while the infant is feeding.

Laboratory and radiological work up:

Our study depended on full history and cautious physical examination which can direct to risk stratification of the patients , and laboratory investigation according to the guideline was as the following :

Low Risk group :

Briefly monitored patients with contentious pulse oximetry for 1-4 hours.

High risk group

They are more likely to have a serious underlying conditions and possibly future events , however the guideline didn't recommend specific investigations to be done and recommend to work up based on our degree of clinical suspicion of a concerning underlying etiology

Initial work up to all the cases includes CBC , Differential leucocytic count ,arterial blood gases, serum creatinine , serum calcium and chest xray.

Then full work up was done case by case according to suspicion of a concerning underlying etiology **as follow** :

- Blood cultures for cases of possible sepsis.
- Toxicology screen if suspected and if available.
- Lumbar puncture, brain imaging were done when we suspect CNS infection.
- ECG, ECHO for suspected cardiac causes.
- Brain imaging and EEG for seizures.

Statistical analysis

Data were analyzed with SPSS version 21.

Qualitative data were described using number and percent. Association between categorical variables was tested using Chi-square test.

Continuous variables were presented as mean ± SD (Standard deviation) for parametric data and Median for non-parametric data.

For all above mentioned statistical tests done, the threshold of significance is fixed at 5% level (p-value).

The results were considered:

- Non-significant when the probability of error is more than 5% ($p > 0.05$).
- Significant when the probability of error is less than 5% ($p \leq 0.05$).
- Highly significant when the probability of error is less than 0.1% ($p \leq 0.001$).

The smaller the p-value obtained, the more significant were the results

Results

All results are demonstrated in the following tables.

Table (1) Determination of studied group:

Items	No	%
Number of the studied cases	2462	100
Male	1193	48.%
Female	1269	52 %
Incidence of BRUE among studied cases	39	1.58 %

Table (2) Demographic data of BRUE Group:

Items	Study Group (N=39)	
	No	%
Gender		
Male	18	46 %
Female	21	54 %
Age		
< 2 months	14	36 %
≥ 2 month – 12 months	25	64 %
Median (Range)	2.80	
Mean ±SD	3.80±2.68	
Gestational age		
Term	30	77 %
Preterm	9	23 %

Table (3) Risk classification of BRUE Group

Items	No	%
	Study Group (N= 39)	
Low risk	23	59
High risk	16	41

Table (4) present history of the BRUE group: Circumstances and environment prior to event

Items	Study Group (N= 39)				Total (NO=39)	%	p-value
	Low Risk group (N=23)		High Risk group (N=16)				
	No	%	No	%			
Circumstances and environment prior to event							
Sleeping or Awake							
Awake	19	82.6	14	87.5	33	84.6	0.687
Sleep	4	17.4	2	12.5	6	15.4	
Position during attack							
Prone	2	8.7	4	25	6	15.4	0.174
Supine	19	82.6	10	62.5	29	74.35	0.709
upright	2	8.7	2	12.5	4	10.25	0.166
Last feeding							
Within 1 hour	13	56.5	10	62.5	23	59	0.718
More than 1 hour	10	43.5	6	37.5	16	41	
History of sleep apnea							0.638
Yes	3	13	3	18.75	6	15.4	
No	20	87	13	81.25	33	84.6	

There was no statistical significance between circumstances and environment prior to event to the classification of risk of BRUE.

Table (5) present history of the BRUE group: Description of the Event

Items	Study Group (N= 39)				Total (NO=39)	%	p-value
	Low Risk group (N=23)		High Risk group (N=16)				
	No	%	No	%			
Description of the Event							
Tone							
Normal	15	65.21	6	37.5	21	53.84	0.092
Hypertonic	6	26.08	3	18.75	9	23.07	0.604
Hypotonic	2	8.69	7	43.75	9	23.07	**0.010***
Colour							
Normal	4	17.39	3	18.75	7	17.94	0.916
Cyanosis	18	78.26	8	50	26	66.66	0.068
Pallor	1	4.34	5	31.25	6	15.38	**0.022***
Abnormal movement							
Yes	2	8.7	3	18.75	5	12.82	0.369
No	21	91.3	13	81.25	34	87.18	
Rousable	18	78.26	12	75	30	76.9	0.818
Not rousable	5	21.74	4	25	9	23.07	
Respiratory effort							
Normal	15	65.22	12	75	27	69.23	0.528
Increase RR	0	0	1	6.25	1	2.56	0.235
Decrease RR	8	34.78	3	18.75	11	28.21	0.286
Presence of vomit/blood/ mucus in or around the mouth							0.425
Yes	4	17.4	4	25	8	20.5	
No	19	82.6	12	75	31	79.5	
Chocking or gagging noise							0.473
Yes	5	21.74	2	12.5	7	17.95	
No	18	78.26	14	87.5	32	82.05	

There is statistical significance of High BRUE in patients presented by hypotonia and pallor (p-value 0.010, 0.022) respectively.

Table (6) present history of BRUE group: End of events

Items	Study Group (N= 39)				Total (NO)	%	p-value
	Low Risk group (N=23)		High Risk group (N=16)				
	No	%	No	%			
End of events							
Duration of events							
Less than 30 seconds	10	43.47	8	50	18	46.15	0.697
30-60 seconds	13	56.53	5	31.25	18	46.15	0.126
More than 60 seconds	0	0	3	18.75	3	7.7	**0.031***
Stoppage of events							
Abrupt	15	65.22	8	50	23	58.97	0.355
Gradual	8	34.78	8	50	16	41.03	
Patients back to normal							
Immediately	6	26.09	2	12.5	8	20.51	0.314
Gradual	17	73.91	12	75	29	74.36	0.818
Still not back to normal	0	0	2	12.5	2	5.13	0.162

There is statistical significance of High BRUE in patients presented by duration of the event more than 60 seconds (p-value = 0.031)

Table (7) family history of BRUE group

Items	Study Group (N= 39)				Total (NO)	%	p-value
	Low Risk group (N=23)		High Risk group (N=16)				
	No	%	No	%			
History of sudden infant death syndrome or BRUE							**0.030***
Yes	4	17.4	8	50	12	30.77	
no	19	82.6	8	50	27	69.23	
History of sudden death before the age of 35 years							0.174
Yes	2	8.7	4	25	6	15.4	
No	21	91.3	12	75	33	84.6	
History of stillbirth							
No	19	82.6	11	68.75	30	76.92	0.325
Once	2	8.7	3	18.75	5	12.82	0.369
Twice	2	8.7	2	12.5	4	10.26	0.709
Consanguinity							
Yes	2	8.7	5	31.25	7	17.95	0.074
No	21	91.3	11	68.75	32	82.05	
Previous diagnosis of long QT syndrome							**0.007***
Yes	1	4.35	6	37.5	7	17.95	
No	22	95.65	10	62.5	32	82.05	
History of inborn errors of metabolism							
Yes	0	0	0	0	0	0	
No	23	100	16	100	39	100	
History of developmental delay							0.235
Yes	0	0	1	6.25	1	2.56	
No	23	100	15	93.75	38	97.44	

High risk BRUE is statistically significant increase with history of sudden infant death syndrome (p-value 0.030)and highly significant with history of long QT syndrome or arrhythmia (p-value 0.007)

Table (8) impact of medical history, examination and follow up on risk of Recurrence of BRUE:

Items	Total (n = 39)		Recurrent (N=8)		Non-recurrent (N=31)		χ^2	p-value
	No	%	No	%	No	%		
Age								
< 2 months	14	35.9	6	75	8	25.8	0.016	**0.009***
≥ 2 months	25	64.1	2	25	23	74.2		
Gender								
Male	18	46.15	3	37.5	15	48.39	0.442	0.593
Female	21	53.85	5	62.5	16	51.61		
Gestational age								
Full term	30	76.92	3	37.5	27	87.1	0.009	**0.002***
Preterm	9	23.08	5	62.5	4	12.9		
History of Underlying disease								
yes	15	38.46	6	75	9	29.03	0.025	**0.017***
Nursery admission								
yes	8	20.5	2	25	6	19.35	0.195	0.733
O2 saturation on room air for 4 hours								
Above 90	36	92.3	6	75	30	96.77	0.101	**0.040***
Below 90	3	7.7	2	25	1	3.23		
Exposure to tobacco								
Yes	18	46.15	5	62.5	13	41.94	0.260	0.311
No	21	53.85	3	37.5	18	58.06		
Usage of medications								
Yes	11	28.2	4	50	7	22.5	0.137	0.131
No	28	71.8	4	50	24	77.5		

Recurrence rate is statistically significant in patient below 2 months old , preterm infants , infants with history of underlying diseases, and those whose o2 saturation above 90 , p-value (0.009-0.002-0.017-0.040) respectively.

Table (9) impact of medical history and examination on risk of Death after BRUE:

Items	Total (n = 39)		death (N=3)		survived (N=36)		χ^2	p-value
	No	%	No	%	No	%		
Age								
< 2 months	14	35.9	2	66.66	12	33.33	0.289	0.259
≥ 2 months	25	64.1	1	33.33	24	66.66		
Gender								
Male	18	46.15	1	33.33	17	47.2	0.559	0.653
Female	21	53.85	2	66.66	19	52.8		
Gestational age								
Full term	30	76.9	2	66.66	28	77.8	0.556	0.671
Preterm	9	23.1	1	33.33	8	22.2		
History of Underlying disease								
yes	15	38.5	3	100	12	33.33	0.050	**0.022***
Nursery admission								
yes	8	20.5	2	66.66	6	16.6	0.101	**0.040***
O2 saturation on Room air								
Above 90	36	92.3	3	100	33	91.7	0.781	0.614
Below 90	3	7.7	0	0	3	8.3		
Recurrence attacks of BRUE								
Yes	8	20.5	1	33.33	7	19.4	0.508	0.579
No	31	79.5	2	66.66	29	80.6		
Risk of BRUE								
High risk BRUE	16	41	3	100	13	36.1	0.061	**0.031***
Low Risk BRUE	23	59	0	0	23	63.9		

Risk of death is statistically significant in infants with history of underlying diseases , History of NICU admission and those whose presented by high Risk BRUE , p-value (0.022 - 0.040 – 0.031) respectively.

Table (10) outcome of the BRUE Group

Items	No	%
	Study Group (N= 39)	
Recurrence		
Yes	8	10.3
No	31	89.7
Death		
survived	36	92.3
Died	3	7.7

(11) Final diagnosis of the High Risk BRUEs group:

Diagnosis	Study group (n=16)	
	No	**%**
epilepsy	2	12.5
GERD	3	18.8
pertusis	4	25
sepsis	2	12.5
encephalitis	1	6.3
ventricular tachycardia due to drug intake	1	6.3
congenital heart disease	1	6.3
pneumonia	2	12.5

Discussion:

This work was a prospective cohort study that includes all the infants below 12 months of age presented by BRUEs in Pediatrics Department of Bab El sharya University Hospital in the period of 6 months from June 2018 till December 2018.

The main risk factors for acute events in infants described as BRUE was feeding difficulties, recent upper respiratory symptoms, and age younger than two months, or a history of previous episodes. **(Colombo, et al, 2019)**

Lesser risk factors include premature birth or low birth weight and maternal smoking. Some studies also report that the rate of ALTE is higher among post-mature infants or first-born infants, as compared with the general population.(**Kiechl-Kohlendorfer U, et al, 2005).**

In our study Diagnosis of BRUE was conducted on 39 patients which represents 1.58% of all infants below one year old presented to emergency room at the time of the study.

Estimates of the incidence of BRUE in infants are not available because most available studies focused on the broader and imprecisely defined category of apparent life-threatening event (ALTE); such studies estimated that ALTEs occur in 3:10,000 to 41:10,000 infants **(Tieder et al. 2016).**

As regard the demographic data of the studied group, Male Patients represent 46 %, while female patients represent 54 % of the studied group ranged from 12 days to 12 months old (median age 2.8 months), while previous retrospective study on ALTE done in Tel- Aviv medical center found that 52% of the studied infants were boys between the ages of 1 week and 1 year (median age 6 weeks) (**Weiss et al., 2010).**

Also in a Korean study held at 2015 about 55% of the infants were boys with a median patient age 6 weeks **(Choi and Kim, 2015).** Moreover in (**Stratton et al. 2004)** about 55% of the infants were boys.

In our study the age of 36 % of the cases was below 2 months .while **Choi and Kim (2015)** founded that 69% of patients were younger than 2 months. Previously, (**Esani et al. 2008)** reported that peak incidence of BRUE cases was during the first two months of life.

Regarding prematurity as a risk factor, in our study we found that it presented only in 23% of the cases, These results are consistent with **(Weiss et al. 2010)** who found that prematurity occupied a role only in 26% of the cases, Therefore prematurity may not have an obvious position as a risk factor of BRUE. This was in agreement with (**Fu and Moon .2012)** who reached that prematurity is a risk factor for SIDS rather than for BRUE. Meanwhile (**Choi and Kim 2015)** found that 41.4% of the cases were preterm; one explanation of this is the relatively small sample size of the studied group with peak incidence of age less than one month

The risk classification of the studied group showed low Risk BRUEs represent 59% while High Risk BRUEs represent 41 % of the studied group. while previous Retrospective application of the BRUE criteria on infants younger than12 months of age who had been admitted with an ALTE from 2006 to 2016 at a single tertiary care center in Lombardy, Italy, showed that (42%) were not a BRUE, 16(19%) were a LR-BRUE, and 33 (39%) were a HR-BRUE. (**Colombo , et al, 2019)**

In our study, final diagnosis categories were made in 100 % of HR-BRUE cases, the most frequent diagnoses were pertusis (25%), GER (18.8%) and epilepsy (12.5%). This was in agreement with **(Romaneli et al. 2010)** who found that respiratory tract diseases 38.6% in ALTE cases, **(Doshi et al. 2012)** noticed GER in 46.6% in the ALTE cases while

pertusis in only 29.4% of the cases. in (**Davies and Gupta ,2002)** GER 25%, Pertussis 9%, Seizures 9%.

On trying to determine risk factors for recurrence in BRUE patients we found that there was no significant impact of sex, nursery admission, clinical examination, exposure of tobacco nor usage of medications on recurrence of BRUE episode . Otherwise results have shown that Recurrence rate is statistically significant in patient below 2 months old , preterm infants , infants with history of underlying diseases , and those whose O_2 saturation above 90%.

There was no statistical significance between the final diagnosis of High Risk group and recurrence nor death.

Risk of death is statistically significant in infants with history of underlying diseases , History of NICU admission and those whose presented by high Risk BRUE .

Limitation of the study:

The study is based on a single, tertiary hospital site in Egypt, cairo thus limiting the external validity and generalizability of our results.

- **Conclusion**

Since BRUE can present without signs of acute illness and it is often associated with significant medical conditions, Pediatricians should be aware of its clinical importance.

Applying the recent AAP BRUE guidelines and risk stratification to patients presented by acute events is a safe and cost-effective approach.

- **Recommendations**

- Detailed history and thorough physical examination are of utmost importance to the successful management of Infants presenting with an BRUE.

- Any abnormal signs and symptoms reported by caregivers should be taken seriously, even if they do not match the observations of medical personnel.

- Careful out-patient follow-up is recommended as two of our patients with a LR-BRUE had a recurrence.

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الملخص العربى

معدل الحدوث و عوامل الخطورة للأحداث القصيرة مجهولة السبب القابلة للشفاء للأطفال الرضع المترددين علي قسم الأطفال بمستشفي باب الشعرية الجامعي

المؤلفين: ط / محمود عبدالغني عبدالعزيز ليله – أ د/ هشام أحمد علي- د / الحسن مصطفي زهران
قسم طب الأطفال – كلية طب الأزهر- جامعة الأزهر

في عام 2016 اصدرت الأكاديمية الأمريكية لطب الأطفال مبادئ توجيهية سريرية عملية أوصت خلالها بتغيير مصطلح (الأحداث التي تبدو مهددة لحياة الأطفال) واستبداله ب (الأحداث القصيرة القابلة للشفاء مجهولة السبب)

وتعرف الأحداث القصيرة القابلة للشفاء مجهولة السبب على انها تلك الحوادث التي يتم ملاحظتها على الأطفال اقل من عمر عام و التي يتم الإبلاغ عنها بواسطة المحيطين بهم كحوادث مفاجئة قصير الأجل و التي تشتمل على الأقل على حدث أو أكثر من الأحداث التالية

- حدوث تغيير فى لون الجلد (زرقة أو شحوب)
- انقطاع التنفس ، انخفاض او عدم انتظام فى معدل التنفس .
- تغير ملحوظ فى حركة العضلات (ترهل أو تيبس ملحوظ).
- تغير مستوي الإستجابة .

تزداد نسبة حالات الأحداث القصيرة القابلة للشفاء مجهولة السبب بين الأطفال الخدج وخاصة الأطفال الخدج مع فيروس الجهاز التنفسي المخلوي والالتهابات. كذلك يعتبر الأطفال الذين يتغذون بشكل سريع أو يعانون من سعال متكرر أو الاختناق أثناء الرضاعة معروضون للخطر. معظم هذه الأحداث حميدة ولكنها يمكن أن تدل على مرض أكثر خطورة، مثل التسمم أو إساءة علاج الأطفال.

وقد أضافت المبادئ التوجيهية السريرية العملية من قبل الأكاديمية الأمريكية لطب الأطفال أن الحوادث القصيرة القابلة للشفاء مجهولة السبب تُشخص فقط عندما لا يوجد تفسير للحدث المنتهي بعد أخذ التاريخ المرضي الدقيق و إجراء الفحص السريري الكامل .

الهدف من العمل :الهدف من هذه الدراسه تحديد معدل حدوث و عوامل الإختطار للأحداث القصيرة مجهولة السبب القابلة للشفاء. وقد شملت هذه الدراسه الاطفال المترددين علي قسم الأطفال بمستشفي باب الشعرية الجامعي .

الطريقة المستخدمة فى البحث

خصائص الأطفال الخاضعين للبحث جميع المرضي الأقل من 12 شهرا من العمر بعرض أو أكثر من الأعراض التالية : توقف التنفس ، وتغير لون البشره ، وتغير في حركه العضلات (ترهل العضلات) ، أو الاختناق أو السكوت .

تم تقسيم الحالات الي

1- مجموعه منخفضة الإختطار : اذا كان العمر اكثر من شهرين او كان العمر الجنيني اكثر من 32 اسبوعا ومدة الحدث أقل من 60 ثانية واذا لم يكن الحدث متكررا و لم يحتاج المريض الى انعاش قلبي ورئوي من قِبل شخص مُدَرب.
2- مجموعه عالية الإختطار : إذا كان العمر اقل من شهرين او كان الطفل مبتسراً او مدة الحدث أكثر من 60 ثانية او كان الحدث متكرراً او احتاج الطفل الى انعاش قلبي و رئوي من قِبل شخص مُدَرب .

خصائص الأطفال المستبعدين من البحث اذا زاد عمر الطفل عن سنه او الحلات المعروفه انها تعاني من امراض بالقلب او صرع أو أمراض مزمنة بالرئة تحتاج الي علاج او تم التوصل الى سبب الحدث عن طريق التاريخ المرضي و الفحص السريري المبدئي .

تم إخضاع جميع المرضى تحت الدراسه للاتي :

>> أخذ تاريخ مرضي دقيق: -

تم أخذ التاريخ الكامل من الأسرة عن حالة الطفل قبل هذه المشكله ، والوقت ومدة هذه الاحداث من تغيير لون وزرقه ، سكوت تام ،سعال ، قيء وفقدان للوعي أو نوبات. أيضا تاريخ عائلي دقيق حول متلازمة موت الرضع المفاجئ أو عدم انتظام ضربات القلب والتاريخ الماضي من هجمات مماثلة.

>> الفحص السريري الكامل: -

لتقييم الحالة العامة للمريض وإعطاء فكرة عن التشخيص الأولي بما في ذلك تقييم القلب والجهاز التنفسي، والعصبية. وقد تضمن الفحص :

(1) العلامات الحيوية مع قياس تشبع الدم بالأكسجين.
(2) قياس الطول والوزن، ومحيط الرأس.
(3) دراسة عن علامات الصدمة (كدمات، وسحجات، وانتفاخ اليافوخ الأمامي).
(4) تقييم نمو الطفل
(5) خضوع الطفل لمراقبه دقيقه ، خاصة حين يتم تغذية الرضع.

>>الدراسات المعمليه: -

- المجموعه منخفضة الإختطار: تم الإكتفاء بمراقبه نسبة تشبع الاكسجين بالدم على مدار 4 ساعات باستخدام مقياس النبض و التأكسج مع التزود بمعلومات عن طريقة التواصل بين الأهل و الطبيب لمتابعه حدوث تكرار الحدث
- المجموعة عالية الإختطار : تم عمل المزيد من الفحوصات المعملية للوصول الى تشخيص لسبب الحدث كالتالي :

الاختبارات الاوليه والتي تشمل جميع الحالات بما يتضمن صوره دم تفصيليه، عد الخلايا البيضاء، عينه غازات دم شريانيه، الأشعة السينية عالصدر.

ثم تم عمل فحوصات تفصيليه تشمل كل حالة على حدة على النحو التالي:

- نسبه الصوديوم والبوتاسيوم والمغنيسيوم والكالسيوم عندما يشتبه بامراض التمثيل الغذائي.
- ابره خزعيه وتحليل السائل الشوكي اذا تم الاشتباه بالتهابات بالمخ.
- اختبارات السموم إذا اشتبه في ذلك.
- موجات صوتيه علي القلب ورسم قلب اذا اشتبه بمشكله في القلب.
- رسم مخ واشعه مقطعية و رنين مغناطيسي للمخ للحالات التي تعاني من تشنجات.

<u>نتائج الدراسة</u>

- بلغ عدد المترددين من الاطفال البالغين من العمر أقل من 12 شهر الى استقبال مستشفى باب الشعرية الجامعي 2462 طفل وتم تشخيص الأحداث القصيرة مجهولة السبب القابلة للشفاء فى 39 حالة بنسبة حدوث (1.58%) منهم 18 ذكر و 21 انثي من عمر 11 يوم الي 12 شهر ،(36%) منهم كانوا اقل من عمر شهرين بينما 23% كانوا من الأطفال المبتسرين
- بلغت نسبة المجموعة منخفضة الإختطار (59%) بينما المجموعة عالية الإختطار (41%) . وتكررت الأحداث بمعدل (10%) بين الحالات ، بينما كان معدل الوفاة (7.7%) جميعهم من المجموعة عالية الإختطار.
- تم تشخيص جميع حالات المجموعة عالية الإختطار . وقد مثل السعال الديكي (25%) من الحالات في حين مثل ارتجاع المرئ (18.8%) ، وقد عاني (12.5%) منهم من الصرع .

- وُجد أن معدل تكرار هذه الحوادث له دلائل إحصائية مع الأطفال أقل من عمر شهرين و الأطفال المبتسرين وأولئك الذين كانوا يعانون من أمراض فى فترة سابقة للحدث .
- وُجد أن معدل الوفاة الناتج من هذه الأحدث له دلائل إحصائية مع الأطفال الذين كانوا يُعانون من أمراض فى فترة سابقة للحدث وأولئك الذين لهم تاريخ مرضي للحجز بوحده العناية بالمبتسرين ، و كذلك الذين تم تشخيصهم على أنهم من المجموعة عالية الإختطار .

الاستنتاج:

غالبا ما تتزامن الاحداث القصيرة مجهولة السبب القابلة للشفاء مع حالات مرضيه مهمه جدا ولذلك يجب ان يتوخي أطباء الأطفال الحذر في التعامل مع هذه الاحداث.

توصيات البحث:

يعد التاريخ المرضي التفصيلي والفحص السريري الشامل لهؤلاء الأطفال ذو اهميه كبيره في كيفيه التعامل معهم كما ان لهم دورا كبيرا في تحديد الفحوصات الطبيه المطلوبه والتي حتما ستؤدي للتشخيص الصحيح.