STUDIES ON SOME BACTERIAL TOXINS AND CLINICAL CHARACTERISTICS OF CHILDREN IN BENGHAZI CHILDREN'S HOSPITAL- LIBYA

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ABSTRACT

This research aims to identify the types of bacteria ,Know the types of toxins they secrete and heath problems they cause,know the seasons of the year in which they are most infectecd,and know the types of antibiotics that are most sensitive and resistant to them,and over time they become unresponsitive to medications after that, which leads to the spread of diseases and difficulty of treating them.And increased mortality rate .Bacteria produce many toxins that differ depending on their type. *Escherichia coli* ,which secretes Shiga toxins, causes hemorrhagic colitis,and also secretes intestinal toxins that cause diarrhhea in children.*Staphylococcus aures* secretes many toxins that decompose red or white blood cells and secretes α-toxin(α-hemolysin Or Hla) This study concluded that the bacteria *Pseudomonas* and the highest number of infections was 120, aged from one month to a year. These types of infections caused acute and chronic infections, skin rashes, and other infections .The least of them were infected with *Staphylococcus epidermidis*, and they numbered 25 from the age of 6 to 10 years. Also, the season of the year in which infections occur the most is the winter season, as the number of infections was the highest with 274.Whereas the least season for infection is spring with only 1Sensitivity and resistance of bacteria to antibiotics, as *Staphylococcusepidermidis,* was the most resistant to the antibiotic Ciprofloxacin and numbered 72, *Staphylococcus albus* was the least sensitive to Carbapenems and numbered 9, *Pseudomonas* was the most sensitive to Impenem and numbered 147, and *E.coli* was the least sensitive species to antibiotics .

Keywords:Children; Bacteria; Toxin; Antimicrobial resistance; Hospital.

1. INTRODUCTION

Through studies, it has been found that the main cause of diseases and increased death rates in America as well as around the world are infectious diseases, as well as some people who have heart disease and cancers and

those who suffer from very serious injuries, and through taking medications that lead to a weakened immune system and thus increasing diseases and the toxins they secrete. Some microorganisms, such as bacteria, fungi, animals, and plants, are powerful causes of many diseases, which lead to interactions between the organism causing the disease and the host organism. It is worth that notingBacterial pathogens were first recognized as the primary causes of both acute and chronic diseases in humans and animals [1]. The emergence of antimicrobial resistance (AMR) has resulted in longer hospital stays, increased healthcare costs, and higher mortality rates from infections [2].During the year 2017, the World Health Organization clarified a list of twelve bacterial families that pose a threat to human health [2][3]. These antibiotic-resistant bacteria are particularly dangerous for patients in hospitals and nursing homes, especially the elderly and those dependent on medical devices like ventilators and blood catheters, leading to severe illnesses. These pathogens resist multiple antibiotics, making them major contributors to serious and often deadly infections like bloodstream infections and pneumonia [4].Intrinsic resistance refers to the natural ability of some bacterial species to resist certain antibiotics, such as *E. coli*'s resistance to ampicillin and *Pseudomonas*'s resistance to first and second-generation cephalosporins [5]. Additionally, natural resistance can develop in bacteria when specific genes are activated after exposure to particular levels of antibiotics [6].Not all types of bacteria cause disease in humans, as types of bacteria live inside the intestines, the genitourinary system, or on the skin without causing any disease [7]. It is believed that it has a role in maintaining people's healthIt has been found that bacterial infections affecting children cause infections of the skin, ears, and throat (strep throat).

The treatment process for these infections is carried out in children as well as in adults. The infection occurs in all age groups, but is more common in children. Many severe infections caused by bacteria can be prevented by establishing a routine plan in early childhood and thus treating them. Toxins secreted by bacteria are highly dangerous pathogens for humans and animals. Many bacterial toxins attack host cells and thus cause increased disease. [8]Bacterial cells secrete many toxins, some of which are internal and others external... They are secreted inside the bacterial cell, and some of the exogenous toxins are released through bacterial cell lysis[9].

Bacterial toxins, which are secreted by bacteria, are among the powerful toxins secreted by living organisms because they have high activity even at high dilutions [10][11] and bacterial intestinal infections affect children older than two years of age. It Children over the age of two years. When they are exposed to animals and eat contaminated meat or milk, infection occurs. [12],Bacteria secrete toxins, and the bacteria *Pseudomonas aeruginosa*secretes a toxin called ExoY. *Staphylococcus aureus* secretes many toxins, including Panton Valentine leukocidin and Exfolian toxin (ETA). Bacillus anthracis secretes many toxins, such as Edema toxin (ET), Lethal toxin (LT) pulsPA, and Escherichia coli secretes Toxins, including Heat-Labile toxin (LT), Shiga-like toxin, and each toxin has a bad effect on the level of cells, tissues, or body systems and causes health problems and acute and chronic diseases[13].When bacteria enter the bloodstream, they cause severe infections and even infect organs, causing diseases such as tuberculosis, pneumonia, blood infections, sepsis, and others that cause Incidence of premature death each year[14]. Animal cells have plasma membranes rich in cholesterol.Cytolysins are toxins that attack the lipids in

the cell membrane because they are rich in cholesterol.[15]. *Klebsiella*causes increased health problems and death in newborns and infants. It also causes pneumonia in children suffering from severe malnutrition [16].A recent epidemiological study highlights the diversity of enterotoxin gene profiles of *S. aureus* in a province of China [16]. The most common causes of diarrhea include infections with viruses and bacteria, diarrhea due to a systemic infection not related to the gastrointestinal tract, antibiotic-associated diarrhea, and feeding-related diarrhea [17]. In recent years, antibiotics have played a significant and effective role in reducing risks associated with childbirth and other infections [18].Antibiotics are the known treatment. When using antibiotics, you must follow the instructions carefully because every time they are used, it gives bacteria an opportunity to resist, and over time infections may occur that are difficult for antibiotics to treat. This study sheds light on the different types of bacteria and knowledge of the types of toxins they produce in some children in Benghazi hospitals.

2.METHODS

1.Subject: This study is a retrospective and descriptive epidemiological study of bacterial toxins in children from Benghazi municipality who came to Benghazi Children's Hospital from January 1st, 2020 to November 20th, 2022, where 822 cases of bacterial toxins in children were obtained as documented data in The Children's Hospital in Benghazi, and whether data was confirmed or analyzed

2.Variables: The variables evaluated included sex (male or female), age of the child, and bacterial type.

3. Statistical methods: The SPSS software package, version 26, was used to analyze the data, and the Chi-square test was used to detect any significant differences in the qualitative variables, as the results we obtained were statistically significant for all statistical tests. .

3.RESULTS

3.1 Gender

A total of 822 children were admitted to Benghazi Children's Hospital in the period from Jan.1st, 2020 to Nov. 20th, 2022, where 822 cases of bacterial toxins in children were obtained as documented data from Benghazi Children's Hospital. The reported age of these children ranges between less than a year to 15 years old and the bacterial infection pattern was as follows 57.2% (n=470) males and 42.8%(n=352) females(Fig.1).

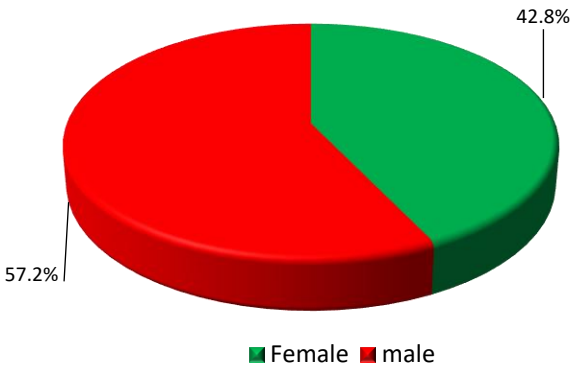

Fig.1.The percentage male (red) and female (green).

The result shows the types of pathogenic bacteria that infect children with *Staphylococcus albus* (n=664) ,and they represent about 80% and those who are infected with *Staphylococcus* (n=802) ,and they represent 42.8% 57.2%

Female male 6 represent about 97.6%and those who are infected with *Staphylococcusepidermidis* (n=698) ,and they represent about 84.9%, and those who are infected with *Staphylococcus aures* (n=767) ,and they represent about 93.3%, and those who are infected with *Pseudomonas* (n=814) ,and they represent about 99.0%, and those who are infected with *E. coli*(n=808),representing about 98.3%,and those who are infected with *Grem Negtive Bacilli* (n=774), representing about 94.2%%, and those who are infected with *Klebsiella* (n=787) ,and they represent about 95.75%.Most children are infected with about 99.0%,and the leastinfected with about 80 (Table I). .

TABLE I. THE PERCENTAGE OF BACTERIA L PATHOGEN THE IN THE PERIOD 2020-2022.

	Positive		Negative	
	N	%	N	%
Staphylococcus albus	664	80.8%	158	19.2%
Staphylococcus	802	97.6%	20	2.4%
Staphylococcus epidermidis	698	84.9%	124	15.1%
Staphylococcus aures	767	93.3%	55	6.7%
Pseudomonas	814	99.0%	8	1.0%
E.coli	808	98.3%	14	1.7%
GremNegtive Bacilli	774	94.2%	48	5.8%
Klebsiella	787	95.7%	35	4.3%

The results show that the most infected with *Staphylococcusalbus* bacteria (n=102),most of them were from the age group less than amonth and the least uninfected were from the age group 6-10years old (n=1).*Staphylococcus* bacteria and the most infected (n=116) from the age group less than a month and the least and their (n=0) from the age group6-10 years old.*staphylococcus epidermidis* bacteria and the most infected

(n=105) from the age group less than a month and the least (n=3) from the age group1-15 years old and *Staphylo auras* bacteria and the most infected (n=118) from the age group1-15 years old.*Pseudomonas* bacteria and the most infected (n=120) from the age group less than a month and the least (n=0) from the age group to the age group 1-5 years old,11-15years old (Table II.1) .

The results show that the children who were most infected with *E.coli* bacteria (n=119) were from the age group less than amonth and least uninfected were from the age group less than 1-5years old (n=0),and the most infected with the bacteria *Grem Negtive Bacilli* (n=108) and least uninfected were from the age groups month to one year old,1-10years old, the most infected with the bacteria *Klebsiella* (n=116) and least uninfected were from the age groups month to one year old,6-15 years old(Table II.2)

3.2 Receiving hospital units

After the initial diagnosis of children infected with bacteria, the result received these units were ABC units since it is the unit of their (n=114) age which was less than a month and then (n=55) age month to one year old the least of them (n=24) aged from 11-15 years old,and the unit B (n=117) aged less than a month(n=62) the least of them(n=23) aged 6-10 years old and the unit C (n=118)where ages were less than a month and then (n=58) and the least of

them(n=27)aged 6-10 years old and result outcomes received from the ICU Unit (n=105)aged less than a month and nights (n=33)age month to one year old and younger (n=20)aged from 11-15 years old, Dialysis (n=119)age month to one year old and nights (n=63)age month to one year old and

younger(n=26)aged from6-15 years old, Neonata Unit(n=60)aged from a month to one year old and nights(n=43)aged 1-5 years old and younger (n=28)aged 6-10 years old, Entrogasteril Unit(n=118) aged less than a month and nights (n=61)age month to one year old and younger(n=28)aged 6-10 years old (TableIII.).

TABLE II.1. IT EXPLAINS THE AGE GROUPS FROM LESS THAN A MONTH TO 15 YEARS OLD AND THE TYPES OF BACTERIA.

age group	*S. albus*		*Staphylococcus*		*S. epidermidis*		*S. auras*		*Pseudomonas*	
	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
less than month	102	18	116	4	105	15	118	2	120	0
month to one year	54	10	63	1	58	6	63	1	62	2
1-5	42	1	42	1	40	3	40	3	43	0
6-10	27	1	28	0	25	3	27	1	27	1
11-15	28	4	28	4	29	3	29	3	32	0
Total	253	34	277	10	257	30	277	10	284	3
p_value	0.107		0.04		0.876		0.15		0.167	

TABLE II.2. IT EXPLAINS THE AGE GROUPS FROM LESS THAN A MONTH TO 15 YEARS OLD AND THE TYPES OF BACTERIA.

age	*E.coli*		*GremNegtive Bacilli*		*Klebsiella*	
	Positive	Negative	Positive	Negative	Positive	Negative
less than month	119	1	108	12	116	4
month to one year	63	1	61	3	64	0
1-5	43	0	43	0	42	1
6-10	27	1	28	0	28	0
11-15	30	2	28	4	32	0
Total	282	5	268	19	282	5
p_value	0.223		0.051		0.398	

TABLEIII..SHOWS THE HOSPITALIZATION UNITS AND AGE GROUPS.

age	A Unit		B Unit		C Unit	
	absent	present	absent	present	absent	present
less than month	114	6	117	3	118	2
month to one year	55	9	62	2	58	6
1-5	32	11	40	3	39	4
6-10	26	2	23	5	27	1
11-15	24	8	31	1	32	0
Total	251	36	273	14	274	13
p_value	0.001		0.013		0.048	

3.3 Seasons

The figure shows the seasons of the year and the number of cases of infection in them,as summer season has the (n=167)representing about 20.3%and autumn season (n=234)and they represent about 28.5% and winter season has the highest infection (n=274) and they represent about 33.3% spring season is the lowest with (n=147) and they represent about 17.9%(Fig.2).

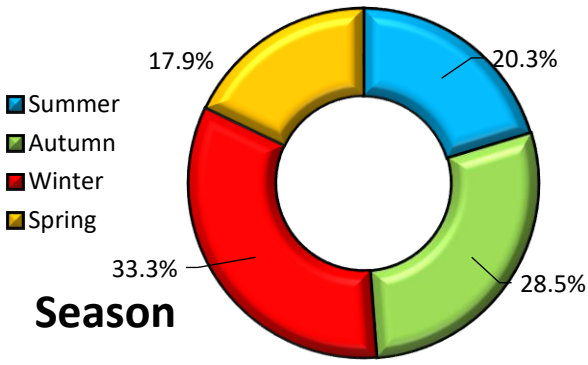

Fig.2.The percentage of the seasons in which the infection was recorded

The results show the type of bacteria that infect children in each seasons ,where the infection with *Staphylococcusalbus* is the highest in the winter season(n=225), then the autumn season (n=186) after that comes the spring season (n=131) and the lowest is the summer season(n=122).

Chi-square test revealed that there is a significant difference between the seasons of the year(X2 =13.566 p=0.004)and the infection with *Staphylococcus*in winter(n=270),autumn seasons (n=229) ,summer seasons (n=157)and the least infected in the spring season (n=146).The X2 -test (X2 =11.973,p=0.007)showed that there are differences between the seasons of the year in terms of infection,and the infection with *Staphylococcus epidermidis*is higher in the winter season (n=222),followed by the autumn season (n=211), the summer seasons (n=155) and the least seasonsin which infection occurs is thespringseason (n=110). The X2 -test (X^2 =28.095 ,p=0.0001)showed that there are differences between the seasons of the year in terms ofinfection,and the infection with *Staphylococcus aurasi*s higher in the winter season (n=257) ,then followed by the autumn season (n=224),summer seasons (n=149)and the least seasons in which infection occurs is thespring season (n=137). The X2 -test (X^2 =6.766 ,p=0.08)showed that there are differences between the seasons of the year in terms of infection, Pseudomonas was higher in the winter season(n=273) and lowest in the season (n=143)and the (X^2 =4.327 p=0.228), was higher in the winter season(n=256) and lowest in the season (n=137)and the (X^2 =1.036 p=0.786), was higher in the winter season(n=273) and lowest in the season (n=143)and the (X^2 =4.327 p=0.228), *E.coli* was higher in the winter season(n=273) and lowest in the season (n=143)and the (X^2 =21.448 p=0.001), *Grem Negative Bacilli* was higher in the winter season(n=256)

and lowest in the season (n=137)and the (X^2 =1.036 p=0.786), *Klebsiella* was higher in the winter season(n=261) and lowest in the season (n=134)and the (X2 =12.124 p=0.007)(TableIV.).

TABLE.IV. SHOWS THE TYPES OF BACTERIA, SEASONS OF THE YEAR AND THE NUMBER OF INFECTIONS.

		Season					
		Summer	Autumn	Winter	Spring		
Staphylococcusalbus	Positive	122	186	225	131	13.566	0.004
	Negative	45	48	49	16		
	Total	167	234	274	147		
StaphylococcusCoccus	Positive	157	229	270	146	11.973	0.007
	Negative	10	5	4	1		
	Total	167	234	274	147		
Staphylococcus epidermidis	Positive	155	211	222	110	28.095	0.0001
	Negative	12	23	52	37		
	Total	167	234	274	147		
Staphylococcus auras	Positive	149	224	257	137	6.766	0.08
	Negative	18	10	17	10		
	Total	167	234	274	147		
Pseudomonas	Positive	164	231	274	145	4.327	0.228
	Negative	3	3	0	2		
	Total	167	234	274	147		
E.coli	Positive	158	234	273	143	21.448	0.001
	Negative	9	0	1	4		
	Total	167	234	274	147		
Grem Negative Bacilli	Positive	159	222	256	137	1.063	0.786
	Negative	8	12	18	10		
	Total	167	234	274	147		
Klebsiella	Positive	162	230	261	134	12.124	0.007
	Negative	5	4	13	13		
	Total	167	234	274	147		

The results showed that the most sensitive *E. coli* bacteria were to Ciprofloxacin, about 115, followed by *Staphylococcus* bacteria, numbering 113, and the least sensitive being Pseudomonas, numbering 6, and the most resistant being *Staphylococcus epidermidis*, numbering 72, while Gentamicin, the most sensitive being E. coli, numbering 97, the least sensitive being *Staphylococcus albus*, numbering 46, and the most resistant being *Staphylococcus us epidermidis*, *Pseudomonas, E.coli*, and a number There were 40 of them each, and Impenem was the most sensitive *to Pseudomonas*, numbering 147, and the least resistant, numbering 21(Table.V.).

TABLE.V. IT SHOWS ANTIBIOTICS, RESISTANCE AND BACTERIA SENSITIVITY.

		S.albus		*Staphylococcus*		*S. epidermidis*		*S. aures*		*Pseudomonas*		*E.coli*		*GremNegtive Bacilli*		*Klebsiella*	
		Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative
Ciproflox acin	Resistant	56	17	67	6	72	1	61	12	71	2	69	4	48	25	66	7
	Sensitive	87	32	113	6	99	20	97	22	**6**	2	115	4	100	19	103	16
	p.value	0.578		0.377		0.000		0.438		0.618		0.480		0.003		0.440	
Gentamicin	Resistan	34	7	35	6	40	1	35	6	40	1	40	1	27	14	36	5
	Sensitive	46	51	92	5	92	5	87	10	96	1	97	0	88	9	82	15
	p.value	0.00		0.059		0.475		0.468		0.527		0.123		0.00		0.618	
Ampicillin	Resistan	28	20	44	4	47	1	40	8	47	1	45	3	42	6	43	5
	Sensitive	32	27	49	10	50	9	49	10	58	1	59	0	57	2	58	1
	p.value	0.67		0.189		0.020		0.969		0.883		0.051		0.75		0.051	
Impenem	Resistan	29	7	34	2	32	4	34	2	34	2	36	0	21	15	31	5
	Sensitive	**86**	63	143	6	138	11	126	23	147	2	145	4	125	24	132	17
	p.value	0.01		0.686		0.462		0.120		0.119		0.320		0.00		0.680	
Augmentin	Resistan	26	7	33	0	33	0	31	2	33	0	30	3	19	14	27	6
	Sensitive	44	37	77	4	69	12	69	12	80	1	81	0	78	3	68	13
	p.value	0.02		0.194		0.019		0.197		0.52		0.006		0.00		0.782	
	Sensitive	27	30	54	3	47	10	48	9	57	57	58	56	54	3	55	2

4. DISCUSSION

This study included 822 children, their ages ranged from less types of bacteria. The number of females is (352) and they represent (n=42.8%) and the number of males is (n=470) and they represent (52.7%). It is expected that when the type of bacteria is known, it is possible to know the type of toxin it secretes. Also, the *Pseudomonas aeruginosa* bacteria secrete a toxin called ExoY, and Staphylococcus aureus secretes many toxins, including Panton Valentine leukocidin and Exfolian toxin (ETA), and Anthrax bacteria produce several toxins, such as edema toxin (ET) and lethal toxin (LT). *E. coli* bacteria produce toxins, including toxins that are heat-tolerantand Shiga-like toxin. Each toxin has a bad effect on the level of cells, tissues, or body systems and causes health problems and acute and chronic diseases [13]. A study was conducted on newborns, and the number of blood samples was about 300 samples, and about (33.43%) were not infected, and 69% of them were infected with E. coli bacteria. The results of the study showed that in Nigeria about (55.1%) and Nigeria about (42%) of newborns are infected. The same study reported that blood poisoning is the cause of diseases and deaths among newborns equally, [19].In addition, the high rate of Escherichia coli bacteria was found to be similar to another study in Abidjan and England, at 68% and 36.4%, respectively. In addition, it has been shown that newborns are more susceptible to infection with *E. coli* at birth [20].study was conducted in Tripoli, and the number of blood samples was 302, representing about (19.8%) people infected with bacteria. The highest infection was with *Klebsiella pneumonia*e bacteria (46.7%), followed by *Staphylococcus aureus* (20%), while in *Escherichia coli (*10%).It has been proven that most bacteria are resistant to many types of

antibiotics, and most isolates are resistant to antibiotics such as gentamicin[13].A study has shown that bacteria may secrete many toxins, and one toxin may be secreted, as in the strains of *Staphylococcus aureus*, which are capable of secreting white toxins, enterotoxins, and other toxins[20].In addition, Babies at birth are more susceptible to infection with *E. coli* bacteria due to lack of sterility. [21]. The results showed that the number of children who tested positive for *Escherichia coli* bacteria was about 98.3% of the total number of children, which amounted to 822 children, and it appeared in the age group of less than a month, and their number was 119, then the age of a month and less than a year, and their number was 63, while the group under one year was years. To ten years, the season with the highest incidence of infection is winter (n = 274). Grumann *etal* in 2013 showed that among Gram-positive and Gram-negative rods, Staphylococcus aureus releases a variety of toxins, such as spore toxins, spore toxins, and superantigens, leading to inflammation of the skin, tissues, and lungs. [22]. This knowledge is similar to what Jessica found in 2020 *S. aureus* secretes a type of cytotoxin, and Panton-Valentine leucocidin may be one of the toxins it secretesZhang and others in 2021 found that the study was conducted from 2018 to 2020, and the bacilli were Gram-negative, with an overall detection rate of 62.86%, among which *K. pneumoniae* represented 22.83%, *P. aeruginosa* 17.66%, and Escherichia coli 13.44%[20][23].The number of Gram-positive cocci at 19.35% and *Staphylococcus aureus* and Coagulase-negative *Staphylococci* (CoNS) is much lower than it was 13 years ago, at 9.91% and 3.38% of the total. A study by Al-Nawawi *et al* in 2022 also showed that among 246Children with ICU44 ,The number of children infected with K. pneumoniae bacteria

is 54.The study showed the number of children with *Pseudomonas spp* bacteria in Siomonaswas 814 representing about 99%[24]. The most infected age group was less than a month of 120 and then the age group from one month to one year old and their number was 62 and the lowest infected age group ranged from 6 to 10 years old and a value of me 0.167 and the most infectious seasons of the year were the winter with 274 representingautumn with 231 representing and the lowest infectious seasonwas spring season with (145).

It is known that *Staphylococcus epidermidis*, one of the most common species, lives on the human body and produces membranes that protect it from antibiotics[25] .The results showed that the number of children infected with *Staphylococcus epidermidis* was about 84.9%. Their number was 58, and the lowest age group was from 6 to 1 year. The highest incidence in winter is about 222. Ruppe *et al* in 2015 found that GNB accounts for 70% of lung infections caused by the use of a ventilator, and 30% of cases of vascular (catheter) infections, surgical wound infections and urinary tract infections lead to sepsis. In 2018, a study was conducted in which the number of children reached 1,420, of whom 921 were infected with bacteria, or 86.6%, which were isolated from the blood (GNB)[26]. They are similar in results, as the number of children infected with the bacteria is about 774 children, representing about 94.2%, and the most infected children are less than a month old, numbering 108, then children from one month to one year old. Their number is 61, and the least affected are between 6 and 15 years of age, and the most affected season is winter, n = 256. The results showed that 80% of children infected with staphylococcus, including those under one year old, were more infected in

the winter. No. 225 results where Pseudomonas resistance to the antibiotic cpirofloxacin was 71%, and clinical isolates of P. aeruginosa showed high rates of resistance to imipenem (69.68%) and piperacillin. (70.59%)[27] , on the other hand, in a study conducted in hospitals in Mexico, the resistance rates of E. coli to ciprofloxacin were 55.56% [28] with respect to the other part of the world, such as ICU In Nepal and India, the number of strains resistant to ciprofloxacin is greater, reaching 90.1%, and levofloxacin 77.4% [29][30] The results showed that E. coli bacteria are resistant to ciprofloxacin 69, Merida et al. In 2016, a high level of resistance to ampicillin (97.12-93.98%) and cephalosporins (91.18-60.97%) was found in isolates of K. pneumoniae and Escherichia coli, and the lowest resistance, as results showed in *E. Coli* cola 45, *K. pneumoniae* 43, and gentamicin (62). In the results, the sensitivity of Escherichia coli was 97 and the resistance was 40 to gentamicin, and in general GNB showed high rates of resistance to ampicillin (95.85%), and resistance to gentamicin, Ciprofloxacin 27,59%, and Imipenem (13,33%) [31], and there is a difference as ampicillin showed 57 sensitivity and resistance 42, while its resistance to carboxin is higher than 48, and its sensitivity is 100 while its resistance to carboxane is higher than 48, its sensitivity is 100, and its resistance to gentamicin is similar to the resistance of 27, and in 2016 Paczosa, *et al* found that 76.1 % of *Klebsiella* bacteria are sensitive to amikacin, and 29.1% of them. They were sensitive to imipenem. This is consistent with what the results showed that they are sensitive to 132 imipenem, the results showed that *Staphylococcus* bacteria are more sensitive to ciprofloxacin (87) . Staphylococcus bacteria are most sensitive to ciprofloxacin (113), *S. epidermidis* are highly sensitive

to imipenem (134) and Staphylococcus bacteria are sensitive to ciprofloxacin (97)[32].

4. CONCLUSION

This study included822 children, their ages ranged from less than amonth to 15 years old, and concluded that the percentage of male injury is more than females' .Moreover, the most infectious season of the year is winter and the type of *bacteria staphylococcus epidermidis* is more sensitive to Ciprofloxacin and those who have different types of bacteria, antimicrobial factors must be chosen according to the characteristics of bacterial distribution. Resistance to medicines in each hospital. In addition, the hospital's bacterial resistance monitor

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دراسات على بعض السموم البكتيرية والخصائص السريرية للأطفال في مستشفى الأطفال بنغازي- ليبيا

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ملخص

:يهدف هذا البحث تحديد أنواع البكتيريا و معرفة أنواع السموم التي تفرزها والمشاكل الصحية التي تسببها ومعرفة أكثر فصول السنة أصابه فيها ومعرفة أنواع المضادات الحيوية أكثر حساسية ومقاومة لها و بمرور الزمن فتصبح غير مستجيبة للأدوية بعد ذلك، الأمر الذي يؤدي إلي انتشار الأمراض وصعوبة علاجها وزيادة معدل الوفيات. وتنتج البكتيريا العديد من السموم وتختلف حسب نوعها و *E.Coli* القولوني التي تفزر السموم الشيجا تسبب التهاب القولون ألنزيفي وتفرز أيضا السموم المعوية التي تسبب الإسهال اللاطفال وتفرز المكورات العنقودية الذهبية العديد من السموم التي تحلل الخلايا الدم الحمراء او البيضاء وتفرز α- toxin وغيرها من السموم وقد أجريت هذه الدراسة في مستشفي بنغازي للأطفال وعددهم(822) وعدد الذكور470 و 2 .57% وعدد إناث 352 و 42.8% حيث تم الحصول على هذه البيانات من مختبر في مستشفي الأطفال بنغازي وتوصلت هذه الدراسة إلي إن*Pseudomonas*وكان اعلي عدد إصابات120أعمارهم من شهر إلي سنة وتسبب هذا النوع التهابات الالتهابات حادة والمزمنة وطفح جلدي وغيرها من الإعراض وكان اقلهم إصابة*Staphylococcus epidermidis* وعددهم 25من6-10سنواتوكما إن أكثر مواسم السنة التي تحدث فيها إصابة هو فصل الشتاء ,حيث كان اكبر عدد الإصابات 274,واقل موسم للإصابة هو فصل الربيع وعددهم 1وحساسية ومقاومته البكتيريا للمضادات الحيوية ,حيث كان *Staphylococcusepidermidis*أكثر مقاومة للمضاد الحيوي Ciprofloxacin وعددهم *Staphylococcusalbus*,72واقل حساسيةلCarbapenems وعددهم*Pseudomonas*,9أكثر حساسية ل Impenem وعددهم 147 و*E.coli* اقل الأنواع حساسية للمضادات الحيوية.

الكلمات المفتاحية: الأطفال ، البكتيريا ، السموم ، مقاومة مضادات الميكروبات ، المستشفى.