

**How to Cite:**

Ali, A. Y., Al-Hetty, H. R. A. K., Hamad, H. A., & Alani, A.-A. K. (2022). Study on bacteriological profile which refers to pediatric septicemia and antibiotics'. *International Journal of Health Sciences*, 6(S6), 587–592. <https://doi.org/10.53730/ijhs.v6nS6.9647>

## **Study on bacteriological profile which refers to pediatric septicemia and antibiotics**

**Anas Yahya Ali**

Nursing Department, Almaarif University College, Ramadi, Iraq

Email: [Anas.yahya@uoa.edu.iq](mailto:Anas.yahya@uoa.edu.iq)

**Hussein Riyadh Abdul Kareem Al-Hetty**

Nursing Department, Almaarif University College, Ramadi, Iraq

Email: [Hussain.riyad@uoa.edu.iq](mailto:Hussain.riyad@uoa.edu.iq)

**Hamad Ali Hamad**

Nursing Department, Almaarif University College, Ramadi, Iraq | Laboratories Department, Anbar Cancer Centre, Anbar Health Directorate, Ramadi 31001, Iraq

Email: [hamid.ali@uoa.edu.iq](mailto:hamid.ali@uoa.edu.iq)

**Abd-Alrahman Khalid Alani**

Fallujah Education Department, Anbar Education Directorate, Anbar, Iraq |

Department of Applied Chemistry, College of Applied Sciences, University of Fallujah' Fallujah, Iraq

Email: [abdulrahmankhalid@uofallujah.edu.iq](mailto:abdulrahmankhalid@uofallujah.edu.iq)

**Abstract**---In this study we try to found the bacterio-logical profile for the pediatric sepsis and anti-biotic sensitivity pattern for an isolation for a children's patients. so can be minimized the suspicion that which surrounding for the clinical program for therapy of neo-natal septicemia via the minimizing the periodic Epidemiology surveys of Pathogenic factors and their anti-biotic sensibility patterns lead to recognition a most extremely for anti-pathogens are caused in a specific geographic region or a city. Effective control of cases the septicemia, and research of bacterio-logical the file along together the anti-microbe sensibility patterns that which a notable role. Out of the six hundred eighty-three clinically questionable case for sepsis in this research, one hundred thirty-three. a transplant case had a positive result, with an average of about the blood culture is positiveness rate of 19%. The happening as regards for a Gram-negative & Gram-positive in the organism was 55.7% & 44.3%, as a result. There were ninety-eight (74.8%) isolates of beforehand onset septicemia case, while THIRTY-THREE OF (25.2%) were from late onset disease.

**Keywords**---bacteriological, septicemia, antibiotics'.

## Introduction

Septicemia in newborns indicates the presence of the bacteria infection and is one of the four main causes for newborns' fatality & diseases in India, specifically, the city of Pune. [1]. Cases of septicemia that occur in neo-natal intensive care rooms are really one of the most important problems [2] the signal of blood culture was suspicious cases from a sepsis, meningitis and pneumonia and the fever of unknown source and arthritis and peritonitis and osteomyelitis and endocarditis. For the purpose of conducting examinations, the amount of sterile blood was collected from patients according to their ages for a purpose that each system is vaccinated with eight to ten ml in the grown-up, three to five ml in kids aged two to twelve years, two to three ml in newborns, and kids aged one month to two years and (one) ml in newborns and matched for the Producing company procedures and instructions. newborns sepsis was splitted to (2) types they depended from the age it was a sepsis start (EOS): <seventy-two hour and a late start the sepsis (LOS) ( $\geq$ seventy-two hours) the initial infection from a sepsis is transferred to a fetus midst a childbirth or in a nursery, or into a uterus [3]. the Septicemia in pediatrics is caused via several teams of Gram-positivity and Gram-negativity bacteria and occasionally from a leaven [2]. the Sepsis different When a period of time as well as between the organs of the same body because variation at life-style as well as also because the incorrect using to the antibiotics [4]. we must observation and cyclic evaluation to newborns due to the diffuse Widely of sepsis, in order to cognized of a type, the antibiotics and the sample separated of a blood culture of newborns with a sepsis via therapy delaying for newborns sepsis resulting on excessed deathrate [5, 6].

## Materials and Methods

The Samples are gathered to analyzing sepsis of blood culture researches was gained in a year 2019 from neonatal in city Guluelkar, Pune, in the India. the Sample was gated from kids were suspicious from have sepsis, and the blood culture tested processed for them. The initial move was collected a sample and this required cleverness in a work, because the collect a sample of the kids, and the blood is gate from a finger or from the vein and the heel stick. The initial decisive steps in the laboratory testing operation, next the obtaining a samples, is the outfit for the blood sample. and put a sample in flask and put that flask in (BAC-TEC 9050) and incubate this flask on 310 K for 5 Days to view if there any microorganism or bacteria in this sample. secondly a gather sample for culture and Anti-microbial sensitivity testing and performing to all each the blood culture. the bio-chemically testing to Gram maculation by using the standard process, and Using indole production, citrate exploitation, H<sub>2</sub>S manufacturing and urease testing, motility testing, carbon hydrate exploitation testing & oxidase, and another testing for gram-negativity and using catalase and coagulase and bacitracen and another many testing's were it using for Gram-positivity for the bacteria After 5 days the Blood culture stock that are showing not grown of microbial is the report as culture-negativity, only next the result of routines subculture at a blood, chocolate-agar and MacConkey-agar and blood-agar [7]. The Blood culture stock that showing the grown of microbial was notified as culture positive and a sample was transferred to (VITEK-2). The medication for the disc spread test were in the following concentrations: Ampicillin (10

microgram), cloxacillin (1 microgram), lomefloxacin (10 microgram), amoxeclav (20 to 10 microgram), cephalexin (30 microgram), cefuroxime (30 microgram), ciprofloxacin (5 microgram), erythromycin (microgram), gentamicin (10 microgram), (30 microgram), penicillin (10 units), tetracycline (30 microgram), cotrimoxazole (1.25 microgram trimethoprem/23.75 microgram sulfamethoxazole), amikacen (30 microgram), ofloxacin (5 microgram), pefloxacin (5 microgram), pefloxacin (5 microgram), emorfazone (75 microgram), netilmicin (30 microgram), imipenem (10 microgram), Piperacillen/tazobactam (100 to 10 microgram), azithromycin (15 microgram), and linezolid (30 microgram). The discs are gain from Hi media (in India) Laboratory. this Data analyses was done by using excel Science.

## Results

Out of one hundred two blood sample, twenty-three sample are showing a grown of organisms and seventy-nine samples didn't shows any microbial grow. The happening for a newborns sepsis was 16.9% between a one hundred two blood samples registered in this research. between a positive case, the bacterio-logical file is showing eight cases (30.00%). were Gram-positive cocci and fifteen (70.00%) were Gram-negativity bacilli. The highing bacterial lines isolate were Coagulases negative Staphy-lococcs (35.60%) following via Salmonella Typhi (35.70%), Acinetobacteria spp. (11.90%), Enterobacter spp. (10.20%), Acinetobacter lwoffii (6.7%). The highing spread (70.30%) of positive blood culture is find in the male newborns. There is no signification association between the sex and the blood culture positive in relation to several newborns hazard many factors, positive the blood culture is showing the highing spread for a bacterial grows in newborns case with below 3 days (zero%). or over three days (100. (%Statistical analyses are showing that there is signification association between newborns hazards and culture positive between suspicious cases(fig1.1), gentamicin is a most effective for antibiotic against a Gram-positive bacterium (93.00%) following via amikacen (89.00%) and ofloxacin (85.00%).

The lower effective drug was erythromycin (52.00%) and cefotaxeme (63%). Ampicillin is showing the highing resistivity (78.00%) among Gram-positive and (91.00%) between Gram-negativity separated (Table 1.3). Gentamicin (90.00%) and ofloxacin (90.00%) are a most susceptible and ampicillin (76%) was the most resistant antibiotics against *S. aureus*, any of the (CoNS) lines were susceptible towards amikacen & gentamicin, Ampicillin & ciprofloxacin displayed the highing resistant (83.00%, for either) between (CoNS) separated. Piperacillin was the most efficient against for each Acinetobacteria and Enterobacteria separated Ampicillin is 100% resistance to Acinetobacteria lines. Meropenem, imipenem, gentamicin, and amikacen are most active anti-biotics against all the isolates of Enterobacter. None of the lines of Enterobacteria are shows susceptible to-wards amoxicillin. Cefazideme, amikacen, gentamicin, and ofloxacin were the most susceptible antibiotics against Citrobacter an *S. Typhi* separates. nevertheless, Ampicillin and cotrimoxazole are shows 100% resistant against *S. typhi* are separates.

Table 1.1  
Bacteriological profile of neonatal sepsis from suspected neonates

No.	Age	Gender	Sample
1	1 year	Male	<i>Methicillin resistant Staphylococcus aureus</i>
2	2.09 year	M	<i>Acinetobacter Lwoffii</i>
3	3 year	F	<i>Salmonella Typhi</i>
4	4 year	F	<i>Salmonella Typhi</i>
5	6 year	M	<i>Coagulase negative Staphylococcus</i>
6	8 year	M	<i>Coagulase negative Staphylococcus</i>
7	9 year	M	<i>Salmonella Typhi</i>
8	13 year	M	<i>Enterobacter Cloacae</i>
9	14 year	M	<i>Salmonella Paratyphi A</i>
10	1 year	M	<i>Salmonella Typhi</i>
11	1.06year	F	<i>Coagulase negative Staphylococcus</i>
12	2 year	M	<i>Coagulase negative Staphylococcus</i>
13	2 year	F	<i>Coagulase negative Staphylococcus</i>
14	3 year	M	<i>Coagulase negative Staphylococcus</i>
15	6 year	M	<i>Coagulase negative Staphylococcus</i>
16	10 year	M	<i>Salmonella Typhi</i>
17	1.05 y	F	<i>Enterococcus faecium</i>
18	2 y	F	<i>Salmonella paratyphiA</i>
19	3 y	M	<i>Enterococcus faecium</i>
20	3 y	M	<i>Enterococcus faecium</i>
21	3y	M	<i>Salmonella typhi</i>
22	2y	F	<i>Acinetobacter lwoffii</i>
23	13y	M	<i>Salmonella typhi</i>

Table 1.2.  
Prevalence of positive blood culture in relation to different pediatric risk factors

No.	Neonatal risk factors	Culture positive (%)	Culture negative (%)
1	Sex Male Female	6 2	10 5
2	Age Below 3 days or above 3 days	0% 8%	0% 15%

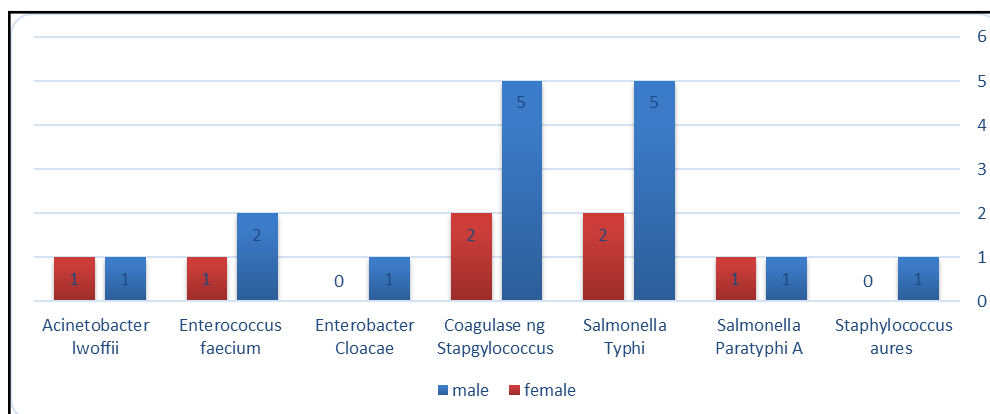


Fig 1.1. Bacteriological profile of neonatal sepsis from suspected neonates

Table 1.3  
Antimicrobial susceptibility patterns of bacterial strains isolated from suspected cases of pediatric sepsis

Antibiotics	<i>Acinetobacter</i> spp. n = 4(%)	<i>Enterobacter</i> spp.n = 6(%)	<i>S. typhi</i> n = 7(%)	<i>S. aureus</i> n =7(%)	CoNS n = 6(%)
Ampicillin	0	NT	0	2 (28)	1 (17)
Amoxycillin	1 (25)	0	1 (100)	5 (71)	3 (50)
Piperacillin	4 (100)	NT	NT	NT	NT
Amikacin	2 (50)	6 (100)	7 (100)	6 (86)	6 (100)
Gentamicin	2 (50)	6 (100)	7 (100)	6 (86)	6 (100)
Azithromycin	NT	NT	7 (100)	NT	NT
Cefotaxime	2 (50)	1 (17)	7 (100)	4 (57)	5 (83)
Ceftazidime	1 (25)	2 (33)	7 (100)	NT	NT
Ciprofloxacin	1 (25)	1 (17)	7 (100)	6 (86)	1 (17)
Ofloxacin	2 (50)	5 (83)	7 (100)	6 (86)	4 (67)
Cotrimoxazole	3 (75)	5 (83)	0	NT	NT
Erythromycin	NT	NT	NT	4 (57)	5 (83)

## Conclusion

A result for this research is detect that (BACTEC-9050) are check with a wide range of actions and the microbial recognition can using for earlier examination at the clinical suspicious case for a newborns septicemia. the current check has explained it interested in the examination of newborns septicemia when are caused via a broad series of organism. the quick availability of tests results and few costs of check is added more advantage. the Data at the culture-positive newborns sepsis is restricted of rurales secondly cares center in India. the Salmonella Typhi and Coagulases negative Staphyl-ococcus were the most popular causes of newborns sepsis at our setup Gram-negativity were the most popular caused for newborns sepsis at our setup. the alarmingly elevated point for the anti-biotic resistant is observe for an urgent estimated and developing for

individual and newborns anti-biotic policy and a protocol for newborns sepsis. The strong infection controls practice at a nursery and labors rooms. The minimal invasive procedure, and restricted using of amino-glycoside and quinolone as firstly-lines antibiotics and carbapenem's as secondly-lines anti-biotics are practical's option to decrease a death-rate of the sepsis.

## References

1. Agnihotri N, Kaistha N, Gupta V. Antimicrobial susceptibility of isolates from neonatal septicemia. *Jpn J Infect Dis.* 2004;57:2735.
2. Gomaa HHA, Udo EE, Rajaram U. Neonatal septicemia in Al-Jahra hospital, Kuwait: Etiologic agents and antibiotic sensitivity patterns. *Med Princ Pract.* 2001;10:145–50.
3. Puopolo KM. Bacterial and fungal infection. In: Cloherty JP, Eichenwald EC, Stark AR, editors. *Manual of neonatal care.* 6th ed. Philadelphia: Lippincott William and Wilkins; 2008. pp. 274–300.
4. Shrestha P, Das BK, Bhatta NK, Jha DK, Das B, Setia A, et al. Clinical and bacteriological profiles of blood culture positive sepsis in newborns. *J Nepal Paediatr Soc.* 2008;27:64–7.
5. Kaistha N, Mehta M, Singla N, Garg R, Chander J. Neonatal septicemia isolates and resistance patterns in a tertiary care hospital of North India. *J Infect Dev Ctries.* 2009;4:55–7.
6. Maayan-Metzger A, Barzilai A, Keller N, Kuint J. Are the “good old” antibiotics still appropriate for early-onset neonatal sepsis? A 10 year survey. *Isr Med Assoc J.* 2009;11:138–42.
7. Collee JG, Marr W. Culture of Bacteria. In: Collee JG, Fraser AG, Marmion BP, Simmons A, editors. *Mackie and McCartney Practical Medical Microbiology.* 14th ed. New York: Churchill Livingstone; 1996. pp. 113–29.
8. Suryasa, W., Sudipa, I. N., Puspani, I. A. M., & Netra, I. (2019). Towards a Change of Emotion in Translation of Kṛṣṇa Text. *Journal of Advanced Research in Dynamical and Control Systems*, 11(2), 1221-1231.
9. Suwija, N., Suarta, M., Suparsa, N., Alit Geria, A.A.G., Suryasa, W. (2019). Balinese speech system towards speaker social behavior. *Humanities & Social Sciences Reviews*, 7(5), 32-40. <https://doi.org/10.18510/hssr.2019.754>
10. Widana, I.K., Dewi, G.A.O.C., Suryasa, W. (2020). Ergonomics approach to improve student concentration on learning process of professional ethics. *Journal of Advanced Research in Dynamical and Control Systems*, 12(7), 429-445.