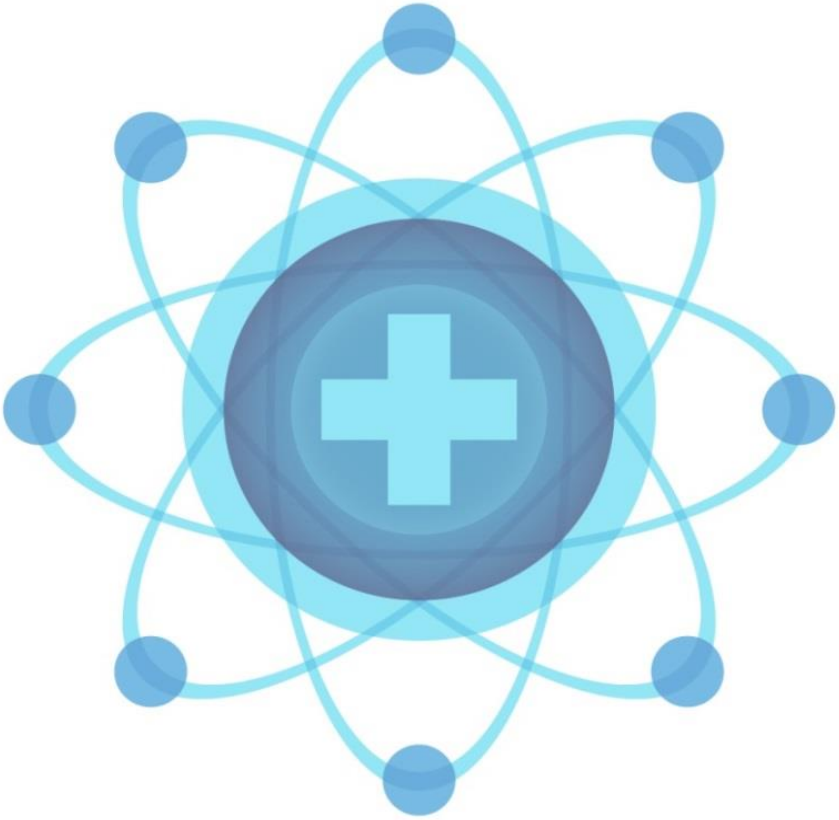

INTERNATIONAL MEDICAL SCIENTIFIC JOURNAL

ART OF MEDICINE

Volume-2
Issue-1

Founder and Publisher **Pascual Izquierdo-Egea / North American Academic Publishing Platforms**

Internet address: http://artofmedicineimsj.us

E-mail: info@artofmedicineimsj.us

11931 Barlow Pl Philadelphia, PA 19116, USA +1 (929) 266-0862

Available at https://www.bookwire.com/

ISBN: 978-0-578-26510-0

Art of Medicine
International Medical Scientific Journal
10.5281/zenodo.6558960
Volume-2
Issue-1

DETECTION OF THE ETIOLOGICAL FACTOR OF SEPSIS IN INFANTS BY THE METHOD OF GAS-LIQUID CHROMATOGRAPHY

Rabbimova D.T., Yusupov F.T.
Samarkand State Medical Institute, Uzbekistan

Sepsis remains an urgent problem in pediatrics due to high mortality. To date, the problem of laboratory diagnosis of sepsis has not been resolved. The results of a large number of studies conducted in recent years indicate that in the development of purulent-inflammatory diseases, sepsis and other cases of infectious diseases, the level of various opportunistic and saprophytic both aerobic and anaerobic inflammations of the microflora increases [1,2], which has features of the development of the inflammatory process. However, the methods of classical microbiological diagnostics (blood culture), with the isolation of a pure culture of anaerobes, are laborious and not always secondary. Recently, for the diagnosis of anaerobic pyoinflammatory phenomena, the determination of metabolites of anaerobic bacteria, which are low molecular weight compounds and are specific markers that create volatile fatty acids (VFA), which allow you to quickly and reliably determine a small proportion of microbial inflammation, has been used. including anaerobes in any biological environment of the body and obtaining results . , all of which are specific to strict anaerobes as end products enriched in human cells. The fact of detection of VFAs in biological media and tissues is used to diagnose anaerobic diseases [4,6,8].

The aim of the study was to test the diagnostic detection of the detection of markers of the proposed gas-liquid chromatography method in children with sepsis.

Material and research methods . The course of sepsis was studied in 79 children aged 2 months and older. up to 1 year, found in the resuscitation and intensive care units of purulent-septic patients of the branch of Children's Surgery of the Republican Scientific and Practical Center for Children's Hospitals in Samarkand. In 56 cases, a septicemic form of sepsis was diagnosed, and in 23 cases - a septicopyemic form of sepsis. The comparison group included 20 practically healthy children of the same age.

Gram-positive and gram-negative aerobes by classical bacteriological detection. Anaerobic infection is detected by gas-liquid chromatography [1].

Methodology for Hygienic assessment of tentative markers of suspicious fatty acids in the form of their methyl esters: stationary phase - 15% lestosil on NAWc chromaton with a particle size of 0.150-0.250 mm, in a glass column with a size of 0.04x1.00m; flow rate of the gas carrier - nitrogen - 32 ml/min; detector - flame ionization, ratio of nitrogen: hydrogen: air = 1:1:10, the volume of the injected sample - 2-3 μl hexane extract of methyl esters of fatty acids (from the analyzed sample, the lipid fraction was isolated by the Folch method , methyl esters of fatty acids with obtaining transesterification of glycerides methanol in the open access of acetyl chloride according to the method [3].

10.5281/zenodo.6558960

Identification of southern fatty acids is carried out by the method of "witnesses" and on the basis of the method of structural group properties [3,4], quantitative analysis - by the method of absolute assessment [6]. Statistical data processing is carried out using the Statistica 6.0 application package .

The results of the study and their discussion. The most common point of view on the primary incidence of bacteremia in the development of sepsis is used; in all developing diseases, a blood test for morbidity was performed immediately upon admission to the hospital. Data on the spectrum of microorganisms isolated from clinical material (blood, wound culture, drainage, fistula, throat culture, urine culture, feces culture) are found in Table 1.

Table 1

Frequency of allocation of different groups material, %

Clinical Material	Culture Growth	Gram (-) sticks	Gram (+) sticks	Mushrooms of the genus Candida	Gram (-) Gram (+) mixed
Blood (n= 192)	43.2	48.2 _	36.2	5 , 6	-
Culture from wounds, drainage, fistula (n =83)	91.5	61.8 _	30, 2	7, 9	-
Seeding from throat (n =192)	78.1	36.6	41.3	5.3	16.6
Urine culture (n =192)	26.5	4 5 .1	3 3 , 3	17.6	3, 9
Fecal culture (n =192)	94.7	45,0 _ _	34 , 1	6, 1	14.8

As can be seen from the table, the detected signs of an increase in blood levels were detected only in 43.2 % of cases. In exceptional cases of blood cultures , gram-positive infections are present at the level of 36.2%, while Staphylococcus aureus prevails in the profile - 63.3%, while the growth of the culture of epidermal staphylococcus was noted in 33.3% of cases, and streptococcus in 3.4% of cases. Gram-negative rods in the blood culture were detected in 48.2% of cases, of which Proteus - in 37.5%, the detected rod - in 52.5%, Pseudomonas aeruginosa - in 5%, Klebsiella - in 5% of cases. The growth of fungi of the genus Candida in blood culture was observed in 5.6% of cases of the development of diseases - manifestations of 5.6%.

Thus, the results of the analysis of a bacteriological disease, hemoculture , aerobic flora, causing the role of gram-positive and gram-positive flora in the etiological practice of sepsis in newborns.

10.5281/zenodo.6558960

The study of anaerobic infection by GLC revealed that the most sensitive pathogens in sepsis in newborns were clostridia , peptostreptococci (gram-positive anaerobes), fusobacteria (gram-negative anaerobes) (Table 2).

table 2

The content of risk markers in the blood of children

	Microorganism	Marker	sepsis
one	Peptostreptococcoxanaerobus	Isolauric acid iC12	Y \u003d 8.23 * 10 ^{5} * x
2	propionibacteria	Isopentadecanoic acid i15	Y \u003d 5.3 6 * 10 ^{5} * x
3	fusobacteria	3 -hydroxypalmitic acid	Y = 7.1 4 * 10 5 * ^{x}
4	Clostridium ramosum	9.10Tetradecenoic acid 15:1Δ9	Y \u003d 8.16 * 10 ^{5} * x
5	Enterococcus faecalis	Cyclononedecanoic acid (19cyc)	Y \u003d 10.22 * 10 ^{5} * x
6	lactobacilli	1-methylenoctadecanoic acid (C19cyc)	Y \ u003d 5.73 * 10 ^{5} * x
		Heptadecanoic aldehyde (7a)	Y=1 1 , 40 * 10 ^{5} * x
		Cyclononedecane aldehyde	Y= 7.52 * 10 5 * x
7	Bifidumbacteria	Isooctadecanic (i 18)	Y= 8 , 33 * 10 ^{5} * x
		Tetradecanoic acid (14a)	Y \u003d 10,1 5 * 10 ^{5} * x
		Octadecene aldehyde	Y= 6 , 12 * 10 ^{5} * x

Note: * Y is the content of the marker in the microorganism;
x is the peak height in the chromatogram , mm.

Normally, VFA does not develop into the systemic circulation, acid utilization occurs in the same place, in the intestine, only microbial formation occurs, since the products of anaerobic bacteria do not accumulate in eukaryotic cells, they penetrate into the surrounding epithelium, penetrate the intestinal barrier. At the same time, according to Beloborodova N.V.[8] with a high degree of expression of these metabolites, anaerobes can arise from foci of significant environmental pollution , suppressing immunoreactivity , contributing to development in various biological objects in children with sepsis. The results obtained are found in table. 3.

Table 3

Comparative content of microbial markers in biological fluids in sepsis in newborns.

H	Type of microorganism	biological fluid	Correlation coefficient for the content of markers in biological fluids		
			Blood	wound exudate	coprofiltrate
one	Isolauric acid iC12	Blood	1000	0.989	0.926
		wound exudate	0.989	1000	0.945
		coprofiltrate	0.926	0.945	1000
2	Isopentadecanoic acid i15	Blood	1000	0.973	0.944
		wound exudate	0.973	1000	0.978
		coprofiltrate	0.944	0.978	1000
3	3 - hydroxypalmiti - new acid	Blood	1000	0.982	0.956
		wound exudate	0.982	1000	0.933
		coprofiltrate	0.956	0.933	1000
4	9 , 1 0 - tetradecenoic acid 15: 1Δ9	Blood	1000	0.966	0.975
		wound exudate	0.966	1000	0.964
		coprofiltrate	0.975	0.964	1000
5	Cyclononedecanoic acid (19cyc)	Blood	1000	0.971	0.992
		wound exudate	0.971	1000	0.948
		coprofiltrate	0.992	0.948	1000
6	1-methylenoctadecanoic acid (C19cyc)	Blood	1000	0.984	0.969
		wound exudate	0.984	1000	0.980
		coprofiltrate	0.969	0.980	1000
7	Isooctadecanic (i 18)	Blood	1000	0.991	0.958
		wound exudate	0.991	1000	0.978
		coprofiltrate	0.958	0.978	1000

It should be noted that in sepsis in newborns, the value of the correlation coefficient for the content of VFAs from various biological media is greater than 0.9 that is, the results obtained are correlated.

In addition, a direct relationship was found between the severity of the purulent-inflammatory process and the concentration of bacterial markers in biological fluids.

Conclusion:

1. method for express and accurate determination of markers found in various biological materials with subsequent calculation of microorganism titer . antimicrobial and general therapy.

2. There is a high correlation between the content of markers in various biological objects in sepsis in newborns, which shows the determination of the content of markers that do not depend on the object with this detection of markers.

References

1. Aripovsky A. V., Kolesnik P. O., Vezhdel M. I., Titov V. N. Sample preparation method for gas chromatographic determination of fatty acids without preliminary lipid extraction // Clinical laboratory diagnostics. – 2012. – no. 1. - P. 3-6.

2. Krymtseva T.A., Osipov G.A., Boyko N.B. [and etc.]. Minor fatty acids of biological fluids of urogenital organs and their perception in the diagnosis of inflammatory processes. // Journal. microbe epidemic . immune . - 2003. - No. 2. - S. 92-101.

3. Mukhamadiev N.K., Khusainov Kh.Sh., Rozhenko I.N. , Sakodynsky K.I. Structural group methods in gas chromatographic identification of compounds. //DAN UzSSR.-1989.- N 4.- P.42-44.

4. Osipov G.A. Chromato-mass-spectrometric analysis also detects their communities in developing samples with infections and dysbiosis . /Chemical analysis in medical diagnostics. – M.: Nauka, 2010. – S. 293–368

5. Osipov G.A., Rodionov G.G. Application of the method of mass spectrometry of microbial markers in clinical practice // Laboratory diagnostics - Special issue . Laboratory - No. 2, 2013. - S. 68-73.

6. Podzolkova N. M. et al. The possibility of early diagnosis of postpartum purulent-septic complications using chromatography and mass spectrometric analysis / N.M. Podzolkova [and others] // Mother and child: materials of the 8th All- Russian science . Forum, Moscow, 3-6 Oct. 2006 - Moscow, 2006. - S. 203-204.

7. Beloborodova N.V. Integration of the heavy man and the microbiome in his poisoning . // General resuscitation. - No. 4, VIII; 2012, -p.42-54.

8. Priputnevich T.V., Zaitseva S.A. Comparative analysis of the use of mass spectrometry and the concentration of flow cytometry for screening bacteriuria // Akush . igin . - No. 9, 2013.- S. 53-58.

9. Sakodynsky K.I., Brazhnikov V.V., Volkov S.A. etc. Analytical chromatography.- M.: Chemistry, 1993. - 464 p.

10. Emma Tate, John D. Perry, Stephen P. Stanforth , John R. Dean The use of volatile compounds as a diagnostic tool to detect pathogens

11. Rabbimova G.T. Evaluation of microflora features in pregnant women with infectious risk by gas-liquid chromatography