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Review Article : Treatment of Bacterial Meningitis at Educational Al Hussein Hospital and Review of Antibiotics from Global Sources[1]

Dr. Amany Shakeir Jaber[2]
Department Pathological Analysis, College of Sciences, University of Thi-Qar, Iraq

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ABSTRACT

The outcome of bacterial meningitis critically depends on the rapid initiation of bactericidal antibiotic therapy and adequate management of septic shock. In the main laboratory at Educational Al Hussein Hospital. antibiotics have been used to have bacteriocidal effect on bacteria and the review of empirical and specialized antibiotics for meningitis from global sources.

In bacterial meningitis, the choice of an optimum initial empirical antibiotic depends on the resistance patterns. who demonstrate the use of cephalosporin groups, penicillins wth amoxicillin, according to the age groups and the amount of dose , also treatment (specific antibiotic) according to the bacterial species that causes meningitis and explains the duration. If you do not respond to this treatment, there is an alternative, this method is specialized in the elimination of meningitis.

Keyword : *bacterial meningitis , Empirical therapy and Antibiotics*

1. Introduction

Bacterial meningitis is a life threatening disease that results from infection of the meninges. It is commonly caused by a bacterium or a virus. Bacterial types will depend on age, history of vaccination, and past medical illnesses. Some factors can increase the risk of developing bacterial meningitis, including contact with bacterial meningitis, recent infection (ear or sinus infection), travelling to places where bacterial meningitis is common, serious head injury, and low immunity. Often, differentiating bacterial meningitis from viral and tuberculous meningitis is not easy and it is vital to diagnose viral meningitis, which does not require antibiotic therapy from conditions that can be treated. Acute bacterial meningitis is serious with a high rate of fatality. (Muller, 2016 ; Bijlsma, *et al*., 2016 ; Hasbun R and Bronze, 2016 ; Simon, 2016).

Bacterial meningitis is a potentially infectious disease associated with substantial mortality and a risk of permanent disability in survivors.(Tunkel ,*et al*.,2015) Despite ongoing advances in diagnostic methods and treatment strategies, mortality remains as high as 30% in pneumococcal meningitis and 5–10% in meningococcal meningitis. (Brouwer, *et al*.,2015; Strelow and Vidal ,2013). However, outcomes are improved by prompt therapy.(Glimaker, *et al*.,2015; Grindborg, *et al*.,2015).

For this reason bacterial meningitis needs empiric treatment with appropriate potent antibiotics to avoid fatality. The empirical antibiotic regimens should be updated periodically to overcome the development of

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[2] Corresponding Author: amany_pa@sci.utq.edu.iq

antimicrobial resistance. The combination of vancomycin with either ceftriaxone for adults or cefotaxime for pediatric ages is given empirically for those with suspected bacterial meningitis, based upon susceptibilities of isolated pathogens..(Muller ,2016 ; Bijlsma , *et al*.,2016). This therapy is to combat against most penicillin-resistant pneumococci and ß lactamase resistant Haemophilus influenzae. (Muller,2016 ; Bijlsma, *et al*.,2016 ; Verma, *et al*.,2013) Both ceftriaxone and cefotaxime achieve good cerebrospinal fluid (CSF) levels.

At present, therapy of bacterial meningitis relies on b-lactam antibiotics. In countries with a low incidence of thirdgeneration cephalosporin resistance among Str. Pneumonia ≤1%), ceftriaxone and cefotaxime remain the antibacterials of choice. In Germany, according to the 2009–2014 European Committee on Antimicrobial Susceptibility Testing breakpoints, cases (6.6% in 2010–2011 and 11.9 % in 2012–2013), (Imohl , *et al*.,2014) . This underlines the necessity of thorough search of the causative organism by culture of blood, CSF and local infection sites, followed by the adjustment of the antibiotic therapy according to the susceptibility determination. Polymicrobial infections are rare in meningitis. They are encountered particularly in nosocomial meningitis and in the immunocompromised host, and often include uncommon strains with a high rate of antimicrobial resistance (Pintado, *et al.*,2012) .including mycobacteria and fungi (Conde-Pereira, *et al*.,2015).This must be considered in the case of failure of the initial empirical therapy or of relapse (Wang, *et al*.,2005). The aim of the study was to determine the optimal antibiotic treatment for bacterial meningitis in Educational Al Hussein Hospital and compare it with its empirical and specialized treatment from global sources

2. Method

Time and Place

The information was taken from the main laboratory unit at Educational Al -Hussein Hospital in Nasiriyah for patients on the fifth floor subject to spinal cord fluid examination(CSF),For the period from November 2020 to March 2021 .

The results of the antibiotic susceptibility test for bacterial growth were taken from (CSF) samples and a review of anti-meningitis drugs used by global sources

Result:

Table (1) represents antibiotics used against bacteria isolated from (CSF) samples. For bacterial meningitis patients in Teaching Al Hussein Hospital, most antibiotics are bacteriostatic because of their mechanism of action.

Table 1:Anti-Meningitis drugs currently used in AL-Nassiriyha

NO	Drugs	Effect	Comments
1	Ceftazidime	bacteriocidal	activation of bacterical cell autolysins which may contribute to bacterial cell lysis. (Specific antibiotic)
2	Gentamycin	bacteriocidal	binding the 30S subunit of the bacterial ribosome, negatively impacting protein synthesis. (effective concentrations within the CNS)
3	Co-Trimethoxazole	bacteriocidal	sequential blockade of folic acid enzymes in the synthesis pathway.
4	pencillin	bacteriocidal	inhibiting the transpeptidase that catalyzes the final step in cell wall biosynthesis, the cross-linking of peptidoglycan. (Standard treatment)
5	Ticarcilline/clavulanic acid	bacteriocidal	prevent cross-linking of peptidoglycan during cell wall synthesis
6	Ciprofloxacin	bacteriocidal	inhibiting DNA gyrase, and a type II topoisomerase, topoisomerase IV, necessary to separate bacterial DNA,
7	ceftriaxone	bacteriocidal	inhibits bacterial cell wall synthesis by binding to transpeptidases (Specific antibiotic)
8	Rifampin	bacteriocidal	inhibits bacterial RNA polymerase
9	Amikacin	bacteriocidal	effective concentrations within the CNS
10	Nitrofurantion	bacteriocidal	inactivate or alter bacterial ribosomal proteins and other macromolecules.

Experimental treatment of bacterial meningococcal patients who demonstrate the use of cephalosporin groups, penicillins wth amoxicillin , according to the age groups and the amount of dose, especially against the *Streptococcus pneumonia* which is one of the causes of bacterial meningitis. **As in a table (2)**

Table 2: Empiric antibiotic in-hospital treatment for community-acquired bacterial meningitis (van de Beek,*et al*.,2012)

	Standard treatment		
Patient group	**Intravenous dose a Reduced *Streptococcus pneumonia* antimicrobial sensitivity to penicillin**	***S. pneumonia* susceptible to penicillin**	**Intravenous dose**
Neonates <1 month old	Amoxicillin/ampicillin/penicillin plus cefotaxime, or amoxicillin/ampicillin plus an aminoglycoside		Age <1 week: cefotaxime 50 mg/kg q8h; ampicillin/amoxicillin 50 mg/kg q8h; gentamicin 2.5 mg/kg q12h Age 1–4 weeks: ampicillin 50 mg/kg q6h; cefotaxime 50mg/kg q6–8h; gentamicin 2.5 mg/kg q8h; tobramycin 2.5 mg/kg q8h; amikacin 10 mg/kg q8h
Age 1 month to 18 years	Cefotaxime or ceftriaxone plus vancomycin or rifampicin	Cefotaxime or ceftriaxone	Vancomycin 10–15 mg/kg q6h to achieve serum trough concentrations of 15–20 μg/mL; rifampicin 10 mg/kg q12h up to 600 mg/day; cefotaxime 75 mg/kg q6–8h; ceftriaxone 50 mg/kg q12h (maximum 2 g q12h)
Age >18 and <50 years	Cefotaxime or ceftriaxone plus vancomycin or rifampicin	Cefotaxime or ceftriaxone	Ceftriaxone 2 g q12h or 4 g q24h; cefotaxime 2 g q4–6 h; vancomycin 10–20 mg/kg q8–12h to achieve serum trough concentrations of 15–20 μg/mL; rifampicin 300 mg q12h
Age >50 years, or Age >18 and <50 years plus risk	Cefotaxime or ceftriaxone plus vancomycin or rifampicin plus amoxicillin/ampicillin/penicillin G	Cefotaxime or ceftriaxone plus amoxicillin/ampicillin/ penicillin G	Ceftriaxone 2 g q12h or 4 g q24h; cefotaxime 2 g q4–6h; vancomycin 10–20 mg/kg q8–12h to achieve serum trough concentrations of 15–20 μg/mL; rifampicin 300 mg q12h, amoxicillin or ampicillin 2 g q4h

Diabetes mellitus, use of immunosuppressive drugs, cancer and other conditions associated with causing immunocompromise. The **table(3)** shows the treatment according to the bacterial species that causes meningitis and explains the duration. If you do not respond to this treatment, there is an alternative. this method is specialized in the elimination of meningitis

Table (3):Specific antibiotic in-hospital treatment for community-acquired bacterial meningitis

Microorganism	**Standard treatment**	**Alternatives**	**Duration**
Streptococcus pneumoniae 1-Penicillin susceptible (MIC <0.1 μg/mL)	Penicillin or amoxicillin/ampicillin	Ceftriaxone, cefotaxime, chloramphenicol	10–14 days
2-Penicillin resistant (MIC >0.1 μg/mL), third-generation cephalosporin susceptible (MIC <2 μg/mL)	Ceftriaxone or cefotaxime	Cefepime, meropenem, moxifloxacinb	10–14 days
3-Cephalosporin resistant (MIC _2 μg/mL) Vancomycin plus rifampicin, or	vancomycin plus ceftriaxone or cefotaxime, or rifampicin plus ceftriaxone or cefotaximec	Vancomycin plus moxifloxacin,b linezolid	10–14 days
Neisseria meningitidis 1-Penicillin susceptible (MIC <0.1 μg/mL)	Penicillin or amoxicillin /ampicillin	Ceftriaxone, cefotaxime, chloramphenicol	7 days

2-Penicillin resistant (MIC _0.1 µg/mL	Ceftriaxone or cefotaxime	) Cefipime, meropenem, ciprofloxacin or chloramphenicol	7 days
Listeria monocytogenes	Amoxicillin or ampicillin, penicillin Gd	trimethoprim-sulfamethoxazole, moxifloxacin,b meropenem, linezolid	At least 21 days
Haemophilus influenza β-Lactamase negative β-Lactamase positive β-Lactamase negative	 Amoxicillin or ampicillin Ceftriaxone or cefotaxim ampicillin resistant Ceftriaxone or cefotaxime plus meropenem	 Ceftriaxone, cefotaxime or chloramphenicol Cefepime, ciprofloxacin, chloramphenicol Ciprofloxacin	 7–10 days 7–10 days 7–10 days
Staphylococcus aureus Methicillin sensitive	Flucloxacillin, nafcillin, oxacillin	Vancomycin, linezolid, rifampicin,e fosfomycin,e daptomycinb	At least 14 days
Vancomycin resistant (MIC >2.0 µg/mL)	Linezolidf	Rifampicin,e fosfomycin,e daptomycinb	At least 14 days

Table (4) shows recommended experimental treatment by age group. Which is characterized by cephalosporin group and Vancomycin

Table(4): Recommended Empirical therapy of bacterial meningitis.

Community acquired age group	**Recommended antibiotic therapy**
Newborns	Cefotaxime plus ampicillin
Infants and children	Third-generation cephalosporin
Previously healthy adults	Third-generation cephalosporin plus ampicillin
Elderly patients	Third-generation cephalosporin plus ampicillin
Nosocomial	Vancomycin plus meropenem or vancomycin plus ceftazidime# (plus metronidazole after surgery with access through mucus membranes)
Shunt infection	Vancomycin plus meropenem or vancomycin plus ceftazidime

Use of high-impact antibiotics on the central nervous system (CNS) and the appropriate dose with the side effect of these antibiotics on the patient most of which are temporary. Antibiotics appear here Streptomycin, Colistin and Daptomycin and its effective role in the treatment of bacterial meningitis **as show in table (5)**

Table(5) Intraventricular application of antibiotics to reach effective concentrations within the CNS (Nau R, et al., 2010 **).**

Antibiotic	Dose in adults Severe reported	side effects
Gentamicin	5 mg every 24 h	(Temporary)hearing loss, epileptic seizures, aseptic meningitis, eosinophilic CSF pleocytosis
Tobramycin	5 mg every 24 h	Similar as gentamicin
Amikacin	30 mg every 24 h	(Temporary) hearing loss
Streptomycin 1 mg/kg	every 24–48 h	(Temporary) hearing loss, epileptic seizures,radiculitis, transverse myelitis, arachnoiditis, paraplegia
Vancomycin	10–20 mg every 24 h	(Temporary) hearing loss
Colistin (polymyxin E) methanesulfonate (12,500 IU = 1 mg)	10 (1.6–20) mg every 24 h	Meningeal inflammation, with high doses epileptic seizures, loss of appetite, agitation, eosinophilia, edema, pain, albuminuria
Daptomycin	5–10 mg every 24–72 h	Fever

CONCLUSION

1. Antibiotics used in the laboratory for bacteria that cause meningitis are mostly bacteriocidal.

2.There is no evidence of superiority of continuous administration of antibiotics in bacterial meningitis patients(BMP).

2. The empiric antibiotic treatment in (BMP) is expert opinion based on and differentiated for demographic/ epidemiologic factors (age and rate of reduced antibiotic susceptibility).

3. The specific antibiotic treatment in (BMP) is based on antimicrobial susceptibility testing.

RECOMMENDATIONS

1.In patients with suspected bacterial meningitis(BM), it is strongly recommended to perform blood cultures before the first dose of antibiotics is administered.

2. In patients with negative CSF cultures, the causative microorganisms can be identified by PCR

3. The recommended empiric treatment for (BMP) is based on age and local resistance rates, as displayed in Table (2).

4. The recommended specific treatment for (BMP) should be determined by the antibiotic susceptibility pattern, as displayed in Table (3).

DISCUSSION

In the current study, bacteriocidal antibiotic were used, including cephalosporin and penicillin, also gentamicin, which has a specialized effect on the central nervous system(CNS).the reason for the choice of this antibiotic indicates that the distribution of treatment (Special compartment) entry of drug into the cerebrospinal fluid (CSF) and central nervous system (CNS). drug also has relatively poor access too thus making the treatment of infections in these regions difficult.

When comparing the antibiotic used against the bacteria resulting from the cultured of spinal fluid samples. We found most of them are similar but did not specify any bacterial species and its effect is broad spectrum and not narrow spectrum .It was not determined by age groups and no accompanying diseases with meningitis. It was determined by the sensitivity of the bacteria to this antibiotic

The international distribution of antibiotics for bacterial meningococcal patients was divided by age, accompanying disease cases and initial, specialist and standard treatment. But at Al Hussein Educational

Hospital. Just select the antibacterial (bacteriocidal).this encourages many deaths due to antibiotic selection and non-identification of bacterial species. Studies should be conducted on how best to use the treatment For this serious illness.

Empiric antibiotic treatment. The choice of empiric antibiotic treatment is conditional on the age of the patient and the regionalrate of decreased susceptibility to penicillin and third-generation cephalosporins of *S. pneumoniae* . The spectrum of pathogens in neonates is considerably different to that of children

beyond the neonatal age and adults, which is reflected by the empiric antibiotic treatment for this age group. When there is a risk of decreased susceptibility of *S. pneumoniae*, empiric treatment should include vancomycin or rifampicin. However, some experts advise the use of ceftriaxone or cefotaxime as empiric

treatment instead of vancomycin or rifampicin when true resistance to third-generation cephalosporin . When risk factors for an infection with *L. monocytogenes* are present in adults under the age of 50 years (e.g. diabetes, use of immunosuppressive drugs, cancer) or in adults over the age of 50 years, empiric antibiotic treatment should include amoxicillin or ampicillin (Koopmans, *et al*., 2013), for all adults with bacterial meningitis.

Specific antibiotic treatment after identification of causative microorganism.

After identification of the pathogen through culture and antibiotic susceptibility testing, the antibiotic treatment can be optimized. *S. pneumoniae* is currently the most common causative microorganism in adults and the second most common in children beyond the neonatal age. Reduced susceptibility to penicillin and third-generation cephalosporins of *S. pneumoniae* is a growing problem in Europe, although resistance rates vary considerably between countries (van de Beek, et al., 2012).

There is uncertainty regarding the benefit of adding vancomycin or rifampicin to a third-generation cephalosporin in pneumococcal meningitis patients in the setting of decreased susceptibility rates of pneumococci. We systematically evaluated the literature for studies of the efficacy of vancomycin and rifampicin in infections caused by pneumococci resistant to third-generation cephalosporins, (Suntur,*et al*.,2005). These showed that ceftriaxone combined with either vancomycin or rifampicin resulted in a higher rate of CSF sterilization after 24 hours compared to monotherapy with ceftriaxone. Another study showed the superiority of ceftriaxone combined with either rifampicin or rifampicin and vancomycin compared to ceftriaxone combined with vancomycin. Although there is no clinical evidence for adding vancomycin or rifampicin in the setting of lower pneumococcal susceptibility rates, the committee advises addition of vancomycin or rifampicin to third-generation cephalosporins based on in vitro susceptibility patterns (Erdem, *et al*.,2014). The advised duration of treatment is 10–14 days (van de Beek, *et al*.,2012).

This underlines the necessity of thorough search of the causative organism by culture of blood, CSF and local infection sites, followed by the adjustment of the antibiotic therapy according to the susceptibility determination. Polymicrobial infections are rare in meningitis. They are encountered particularly in nosocomial meningitis and in the immunocompromised host, and often include uncommon

strains with a high rate of antimicrobial resistance (Pintado,*et al*.,2012), including mycobacteria and fungi (Conde-Pereira,et al.,2015). This must be considered in the case of failure of the initial empirical therapy or of relapse (Wang,*et al*.,2005).

The introduction of linezolid and daptomycin into therapeutic has increased the options to treat CNS infections by multiresistant Sta. aureus, coagulase-negative staphylococci, vancomycin-resistant enterococci and multiresistant S. *pneumoniae*. Severe problems in finding an adequate antibacterial can arise in rare cases of meningitis caused by vancomycin-resistant enterococci (Knoll, *et al*.,2013). Whether the bacteriostatic agent linezolid because of its favorable pharmacokinetics is more effective than vancomycin (in particular, in combination with another agent such as rifampicin or gentamicin and when administered intravenously and intrathecally) is still a matter of debate

Bacterial cure of meningitis due to vancomycin-resistant En. faecium has been achieved with various antimicrobial drugs used as monotherapy or in combination and with or without intrathecal in addition to intravenous therapy: linezolid, rifampicin, daptomycin, quinupristin-dalfopristin, chloramphenicol, ampicillin, gentamicin.the choice of the antibiotic (or antibiotic combination).

REFERENCES

1. Muller ML. Pediatric Bacterial Meningitis. [[cited 2016]]. Available from

URL: http://reference.medscape.com/refarticlesrch/961497-overview .

2. Bijlsma MW, Brouwer MC, Kasanmoentalib ES, Kloek AT, Lucas MJ, Tanck MW, et al. Community-acquired bacterial meningitis in adults in the Netherlands 2006–14: a prospective cohort study. Lancet Infect Dis. 2016;16:339–347. [PubMed]
3. Hasbun R, Bronze MS. Meningitis Treatment and Management. [[cited 2016]]. Available from URL: http://reference.medscape.com/refarticle-srch/232915-treatment .
4. Simon N. Treatment of Meningococcal Disease. Journal of Adolescent Health. 2016;59(Suppl):S21–S28. [PubMed]
5. Tunkel AR, van de Beek D, Scheld W. Acute meningitis. In: Bennett J, Dolin R and Blaser M, eds. Principles and Practice of Infectious Diseases, 8th edn. Philadelphia: Elsevier/Saunders; 2015; 1097–137.
6. Brouwer MC, McIntyre P, Prasad K, van de Beek D. Corticosteroids for acute bacterial meningitis. Cochrane Database Syst Rev 2015: CD004405.
7. Strelow VL, Vidal JE. Invasive meningococcal disease. Arq Neuropsiquiatr 2013; 71: 653–8.
8. Glimaker M, Johansson B, Grindborg O, Bottai M, Lindquist L, Sjolin J. Adult bacterial meningitis: earlier treatment and improved outcome following guideline revision promoting prompt lumbar puncture. Clin Infect Dis 2015; 60: 1162–9.
9. Grindborg O, Naucler P, Sjolin J, Glimaker M. Adult bacterial meningitis-a quality registry study: earlier treatment and favourable outcome if initial management by infectious diseases physicians. Clin Microbiol Infect 2015; 21: 560–6.
10. Verma N, Savy LE, Lund VL, Croply I, Chee R, Seneviratne L. An important diagnosis to consider in recurrent meningitis. JRSM Short Rep. 2013;4 2042533313486640. [PMC free article] [PubMed]
11. Imohl M, Reinert RR, Tulkens PM, van der Linden M. Penicillin susceptibility breakpoints for Streptococcus pneumonia and their effect on susceptibility categorisation in Germany (1997-2013).mEur J Clin Microbiol 2014;33(11):2035-40
12. Pintado V, Pazos R, Jimenez-Mejias ME, et al. Methicillin-resistant Staphylococcus aureus meningitis in adults: a multicenter study of 86 cases. Medicine 2012;91(1): 10-17
13. Conde-Pereira C, Rodas-Rodriguez L, Diaz-Paz M, et al. Fatal case of polymicrobial meningitis caused by Cryptococcus liquefaciens and Mycobacterium tuberculosis complex in a human immunodeficiency virus-infected patient. J Clin Microbiol 2015;53(8): 2753-5
14. Wang KW, Chang WN, Huang CR, et al. Post-neurosurgical nosocomial bacterial meningitis in adults: microbiology, clinical features, and outcomes. J Clin Neurosci 2005;12(6):647-50.
15. Nau R, Sorgel F, Eiffert H. Penetration of drugs through the blood-cerebrospinal fluid/ blood-brain barrier for treatment of central nervous system infections. Clin Microbiol Rev 2010;23(4):858-83
16. KoopmansM.M, Brouwer, M.C, Bijlsma, M.W et al.,(2013). Clinical Infectious Diseases, Volume 57, Issue 2, 15 July 2013, Pages 247–253, https://doi.org/10.1093/cid/cit250
17. van de Beek.D , BrouwerM.C , Thwaites G.E, Tunkel., AR.(2012). Advances in treatment of bacterial meningitis.lancet.: 380, 9854: 1693-1702
18. Suntur, B.M[b]Oguz Sipahi[c],R[c]MunirBukeC.B (2005).Rifampicin + ceftriaxone versus vancomycin + ceftriaxone in the treatment of penicillin- and cephalosporin-resistant pneumococcal meningitis in an experimental rabbit model.int .antimicro.agent : 26: 258-260
19. Erdem[a], H.Elaldi[b], N.Öztoprak, N.[c] et al.(2014). Mortality indicators in pneumococcal meningitis: therapeutic implications.int. infect.disease.19 :13-19
20. Pintado V, Pazos R, Jimenez-Mejias ME, et al. Methicillin-resistant Staphylococcus aureus meningitis in adults: a multicenter study of 86 cases. Medicine 2012;91(1): 10-17
21. Conde-Pereira C, Rodas-Rodriguez L, Diaz-Paz M, et al. Fatal case of polymicrobial meningitis caused by Cryptococcus liquefaciens and Mycobacterium tuberculosis complex in a human immunodeficiency virus-infected patient. J Clin Microbiol 2015;53(8): 2753-5
22. Wang KW, Chang WN, Huang CR, et al. Post-neurosurgical nosocomial bacterial meningitis in adults: microbiology, clinical

features, and outcomes. J Clin Neurosci 2005;12(6):647-50

23. Knoll BM, Hellmann M, Kotton CN. Vancomycin-resistant enterococcus faecium meningitis in adults: case series and review of the literature. Scand J Infect Dis 2013; 45(2):131-9

الخلاصة

تعتمد نتيجة التهاب السحايا البكتيري بشكل حاسم على البدء السريع في العلاج بالمضادات الحيوية للجراثيم والاعداد الجيد للصدمة الإنتانية. في وحدة المختبر الرئيسي في مستشفى الحسين التعليمي تم استخدام المضادات الحيوية ذات التاثير القاتل للبكتريا مع استعراض المضادات الحيوية التجريبية والمتخصصة لالتهاب السحايا من مصادر عالمية.

في التهاب السحايا البكتيري ، يعتمد اختيار نظام العلاج المبدئي و التجريبي على أنماط المقاومة للمضادات فااستخدام مجموعات السيفالوسبورين والبنسلين مع الأموكسيسيلين ، تبعا للفئات العمرية وكمية الجرعة. وايضا العلاج المتخصص يكون وفقًا للأنواع البكتيرية التي تسبب التهاب السحايا وتشرح مدة اخذ المضاد و إذا لم يستجب لهذا العلاج ، فهناك بديل ، فهذه الطريقة متخصصة في القضاء على التهاب السحايا البكتيري