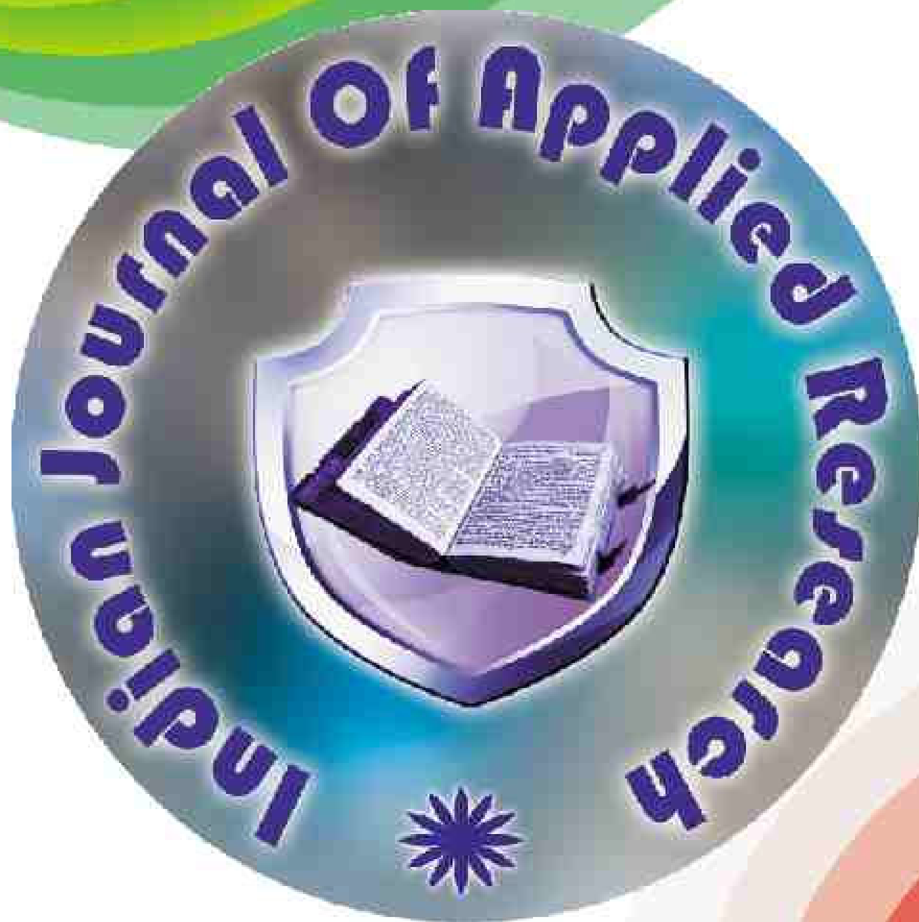
₹ 100 ISSN - 2249-555X
Volume : 1 Issue : 4 January 2012



Journal for All Subjects

www.ijar.in

Listed in International ISSN Directory, Paris.

ISSN - 2249-555X

Indian Journal of Applied Research

Journal for All Subjects

Editor-In-Chief

Dr A Kumar
Director, College Development Council (CDC)
Director, Internal Quality Assurance Cell (IQAC)
Professor in Management,
Department of Business Administration, Faculty of Management,
Bhavnagar University,

Editorial Advisory Board

Dr. S. N. Pathan Maharastra
Dr. SM. Ramasamy Gandhigram
Dr. M. M. Goel Kurukshetra
Dr. S. Ramesh Tamil Nadu
Dr Ramesh Kumar Miryala Nalgonda.
Dr. B. Rajasekaran Tirunelveli
Dr. A. R. Saravankumar Tamilnadu
Dr. Roy M. Thomas Cochin
Dr. G. Selvakumar Salem
Dr. Apurba Ratan Ghosh Burdwan
Dr. Shrawan K Sharma Uttarakhand
Dr. Sudhanshu Joshi Uttarakhand
Prof. (Dr.) B Anandampilai Pudhukottai

Advertisement Details

Position	B/W (Single Color)	Fore Color
Full Inside Cover	₹ 6000	₹ 12500
Full Page (Inside)	₹ 5000	-

Subscription Details

Period	Rate	Discount	Amount Payable
One Year (12 Issues)	₹ 2400	Nil	₹ 2400
Two Year (24 issues)	₹ 4800	₹ 200	₹ 4600
Three Year (36 issues)	₹ 7200	₹ 300	₹ 6900
Five Year (60 issues)	₹ 12000	₹ 600	₹ 11400

You can download the Advertisement / Subscription Form from website www.ijar.in. You will require to print the form. Please fill the form completely and send it to the **Editor, INDIAN JOURNAL OF APPLIED RESEARCH** along with the payment in the form of Demand Draft/Cheque at Par drawn in favour of **INDIAN JOURNAL OF APPLIED RESEARCH** payable at Ahmedabad.

1. Thoughts, language vision and example in published research paper are entirely of author of research paper. It is not necessary that both editor and editorial board are satisfied by the research paper. The responsibility of the matter of research paper/article is entirely of author.
2. Editing of the Indian Journal of Applied Research is processed without any remittance. The selection and publication is done after recommendations of atleast two subject expert referees.
3. In any condition if any National/International University denies accepting the research paper published in IJAR, then it is not the responsibility of Editor, Publisher and Management.
4. Only the first author is entitle to receive the copies of all co-authors
5. Before re-use of published research paper in any manner, it is compulsory to take written permission from the Editor-IJAR, unless it will be assumed as disobedience of copyright rules.
5. All the legal undertaking related to Indian Journal of Applied Research is subject to Ahmedabad Jurisdiction.
7. The research journal will be send by normal post. If the journal is not received by the author of research papers then it will not be the responsibility of the Editor and publisher. The amount for registered post should be borne by author of the research paper in case of second copy of the journal.

Editor,
Indian Journal Of Applied Research
8-A, Banans, Opp. SLU Girls College, New Congres Bhavan, Paldi,
Ahmedabad-380006, Gujarat, INDIA
Contact.: +91-9824097643 E-mail : editor@ijar.in

INDEX

Sr. No	Title	Author	Subject	Page. No.
1.	Statistical Optimization Of Ferulic Acid Esterase Production In Aspergillus Niger Isolate Using Response Surface Methodology	Baljinder Kaur , Neena Garg	Biotechnology	1-6
2.	Development Of Forest Area In Tropics: The Urgency Of People's Participation In The Indian Context	Dr. M. P. Naik	Commerce	7-8
3.	Opportunity For International Corporations At Bop Segments Of Emerging Markets (Focus : India)	Bhudhar Ranjan Chatterjee , Sukanya Chatterjee.	Commerce	9-11
4.	Retail Trade	Viram. J. Vala , Dr. (Prof.) Vijay Kumar Soni	Commerce	12-15
5.	Determinants Of Market Value Added Some Empirical Evidence From Indian Automobile Industry	Dr. A. Vijayakumar	Commerce	16-20
6.	The Welfare Facilities Available To The Workers In Paper Mills In Madurai	Dr. M. Sumathy , A. Vijayalekshmi	Commerce	21-24
7.	Green Marketing - New Hopes And Challenges	Dr. Prashant M. Joshi	Commerce	25-27
8.	A Study On Employee Welfare Measures In Maharashtra State Transport Corporation With Special Reference To Kolhapur District.	Dr. H. M. Thakar , Prof. Urmila Kisan Dubal	Commerce	28-30
9.	Business Environment In South Korea An International Perspective	Dr. M. Kamalun Nabi , Dr. M. Saeed	Commerce	31-35
10.	Market Timing - Implications Of Market Valuation On Share Issues By Indian Companies	L. Ganesamoorthy , Dr. H. Shankar	Commerce	36-38
11.	The Conceptual Framework Of Corporate Social Accounting	Rechanna , Dr. B. Mahadevappa	Commerce	39-50
12.	Labour Welfare Measures And The Extent Of Satisfaction Of Tirupur Garment Employees	Mr. S. Hariharan , Mr. N. Selvakumar, Dr .H. Balakrishnan	Commerce	51-53
13.	Mahila Savsth Aur Jacha-Bacha Ko Bachane Ko Chunoti	Dr. Anup Chaturvedi	Community Science	54-55
14.	Mapping Of Existing Waste Dumping Sites And Newly Proposed Waste Dumping Sites In And Around Chitradurga Taluk, Karnataka State, Using Remote Sensing And GIS Techniques.	Sunil Kumar R. K Chinnaiah , Suresh Kumar B.V	Earth Science	56-58
15.	A Role Of Municipal Council And Corporation Of Financial Problems In Nanded District (Maharashtra)	Dr. A. S. Pawar	Economics	59
16.	Impact Of Institutional Credit On Weaker Section In Akola District	Dr. Devyanee K Nemade, Dr. Vanita K Khobarkar	Economics	60-62
17.	Right To Education In India	Dr. Pawar A. S.	Economics	63-65
18.	Gramin Ayam Adivasi Mahilo Ke Arthik Shakti : Sukhma Virti (Adipur Jila Ke Gramin Ayam Adivasi Mahilao Ka Ek Ayaktik Adhiyan Shobha Gupta	Shobha Gupta	Economics	66-67

19.	Knowledge On Food Security Education Among Higher Secondary Students	Dr. P. Paul Devanesan , Dr. A. Selvan	Education	68-69
20.	Family Environment As A Determinant of Academic Anxiety And Academic Achievement	Dr. RajKumari Kalra , Ms. Preeti Manani	Education	70-71
21.	Awareness On Man-Made Disaster In Environmental Education Among High School Students	Dr. A. Selvan , Dr. P. Paul Devanesan	Education	72-73
22.	Teaching Strategies For Simplifying Fractions In Mathematics	M. Kavitha , Dr. A R. Saravanakumar	Education	74-76
23.	Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA): A Boon to Tribal Women	Dr. Sherly Thomas	Education	77-78
24.	Sports as a Tool for Interest Oriented Learning	E. Baby Sumanna	Education	79-80
25.	Balanced Scorecard for Higher Education	Jyoti D JoshI	Education	81-83
26.	A Study Of The Interactive Influence Of CAI Package On Academic Achievement	Kunal D. Jadhav	Education	84-85
27.	Reduction Of Fault Current Using SFCL At The Suitable Location In The Smartgrid	Pudi Sekhar , K .Venkateswara Rao , M. Ebraheem , P. Nageswara Rao	Electronics	86-88
28.	HRD Climate in Private Manufacturing Sector: An Appraisal	Dr. Sukhwinder Singh Jolly	Engineering	89-90
29.	Wireless Speed Measurement And Control Of Universal Motor	G. Prasad , G. Ramya Swathi, Dr. P. V. N. Prasad , A. Muneiah	Engineering	91-94
30.	Design Of Decentralized Load-Frequency Controller For Deregulated Hydro-Thermal Power Systems With Non-Linearities	M. Vinothkumar , Dr. C. Kumar , Dr. S. Velusami	Engineering	95-99
31.	Optimization Of Process Parameters For Gas Tungsten Arc Welding Aluminum Alloy A6061 By Taguchi Method	P. Hema , K. Allama Prabhu , Prof. K. Ravindranath	Engineering	100-103
32.	Numerical Approach To Predict The Thermal Performance Of Parallel And Counter Flow Packed Bed Solar Air Heaters	Satyender Singha , Prashant Dhiman , Ritika Kondal	Engineering	104-108
33.	Institute For Entrepreneurship Development Amongst Farmers- Especially Small And Marginal Land Holders.	Sweta Sanjog Metha	Entrepreneurship Development	109-111
34.	Phytoplankton Diversity From Godavari River Water (Maharashtra)	Satish.S.Patil , Ishwar.B.Ghorade	Environmental Science	11-114
35.	Nutrient Adequacy Among Selected Tribal Adolescent Girls Of Kattunayakan Tribes In Tamil Nadu	Somishon Keishing , Saranya .R	Home Science	115-116
36.	Vaigyanic Sacharata Aur Arthik- Samajik Vikas	Dr. Sudobh Kumar	Humanities	117-118
37.	E-Pharmacy In India For Reducing Inter-State Accessibility Dispersion	Satinder Bhatia	Information Technology	119-121
38.	Impact Of Intermediaries' Service Delivery In Insurance Sector	Dr. P. Anbuoli , R. Meikanda Ganesh Kumar	Insurance Sector	122-124

39.	Fate And Human Endeavour In The Mahabharata	Dr Maneeta Kahlon	Literature	125-127
40.	Facets of Hunger in Bhabani Bhattacharya's So Many Hungers and Kamala Markandaya's Nectar in a Sieve	Dr. Paramleen Kaur Syali , Ruchee Aggarwal	Literature	128-129
41.	Business Financial Strategy In Small And Medium Scale Brick Industries In Kolar District, Karnataka State.	Muninarayanappa , Dr. S. Muralidhar	Management	130-132
42.	A Study On Brand Equity Analysis Foreign Global Brands Vs Domestic Popular Brands Of Adult Consumer's Perspective In Coimbatore City	A.Pughazhendi, , S. Susendiran, , R. Thirunavukkarasu	Management	133-135
43.	Comparative Analysis of Cellular Phone Usage Outline of Undergraduate Students.	Atul Patel	Management	136-138
44.	A Study On Management Practices Of Entrepreneurs In Informal Sector	Dr. P. Vikkraman , Mr. S. Baskaran	Management	139-142
45.	E-commerce: Emerging Channel for Marketing in India	Dr Mahalaxmi Krishnan	Management	143-144
46.	The Role Of Educational Institutions In Imparting Entrepreneurship Qualities Among Student Community	Dr. N. Ramanjaneyalu	Management	145-147
47.	Impulsive buying and In-store shopping environment	Dr. Surekha Rana , Jyoti Tirthani	Management	148-149
48.	A Study On Management Practices Of Entrepreneurs In Informal Sector	Dr. P. Vikkraman , S. Baskaran	Management	150-153
49.	Risk Management Processes And Techniques For Resolving Customer - Supplier Relationship Issues	Pramod Kumar , Prof (Dr.) S.L.Gupta	Management	154-160
50.	Risk Management Processes & Techniques For The Successful Delivery Of Web Based Software Projects	Pramod Kumar , Prof (Dr.) S. L. Gupta	Management	161-166
51.	Effect Of Brand Equity On Consumer Purchasing Behaviour On Car: Evidence From Car Owners In Madurai District	R. Suganya	Management	167-169
52.	Relationship Management Model For Global It Industry.	Rishi Mohan Bhatnagar , Prof (Dr.) S. L. Gupta	Management	170-173
53.	It's A Myth That Kirana Stores Will Be Wiped Out If FDI Is Allowed In Multi Brand Retail Sector In India	Shweta Patel , M R Brahmachari	Management	174-176
54.	Learning Organization	Sitheswaran K , Dr. K. Balanaga Gurunathan	Management	177-178
55.	Behavior Management: A Ready-made Soup For Indian Managers	Winnie Jasraj Joshi	Management	179-180
56.	Customer Relationship Management In Public Sector Banks	Dr. P. Anbuoli , T. R. Thiruven Kat Raj	Marketing	181-182
57.	Nifedipine Compared With Isoxuprine In Treatment Of Preterm Labor	Dr. Santosh Khajotia	Medical Science	183-184

58.	Single Intraoperative Dose of Tranexamic Acid In Orthopedic Surgery (A Study of Bipolar Modular Prosthesis and Dynamic Hip Screw fixation)	Dr. B. L. Khajotia , Dr. S. K. Agarwal, Dr. Prasant Gadwal	Medical Science	185-187
59.	MVA - A Simple & Safe Surgical Procedure For First Trimester Abortion / Medical Termination Of Pregnancy (MTP)	Dr. Priyamvada Shah , Dr. Sameer Darawade	Medical Science	188-190
60.	Pneumococcal Septic Arthritis in an Infant A Case Report	Dr. Vrishali A Muley , Dr. Dnyaneshwari P Ghadage, . Dr. Arvind V Bhore	Medical Science	191-192
61.	A Clear CSF may not be a Normal CSF A Case Report	Dr. Dnyaneshwari P Ghadage , Dr. Vrishali A. Muley , Dr. Arvind V. Bhore	Medical Science	193-194
62.	Neurectomy For Tic How Much Reliable?	Dr. Monali H. Ghodke , Dr. Seemit V. Shah , Dr. Smita A. Kamtane	Medical Science	195-198
63.	To Assess Acceptability Of Female Condom As A Method Of Temporary Contraception Among Indian Women	Dr Priyanka Shekhawat , Dr. Col (Retd) Gulab Singh, Dr Vidula Kulkarni Joshi	Medical Science	199-200
64.	A Study To Evaluate The Efficacy Of Teaching Intervention On Reduction Of Pediatric Immunization Pain Among Nursing Students	Dr. Ramachandra , Dr. S. Valliammal, Mr. Raja Sudhakar	Nursing	201-202
65.	Screening Of Antenatal Patients For Thalassemia	Dr Mukta Rayate , Dr Durga Karne , Dr Shilpa Bhat, Dr Hemant Damle , Dr Sameer Darawade, Varsha Gogavale	Obstetrics & Gynaecology	203-204
66.	Reservoir Rock Quality of the Lakadong Member in the Eastern Part of Upper Assam Basin, India	Dr. Pradip Borgohain	Petroleum Geology	205-207
67.	Study Of Refractive Index And Excess Parameters For Different Liquid Mixtures At Different Temperatures	Sheeraz Akbar , Mahendra Kumar	Physics	208-210
68.	Refractometric And Excess Parameter Study For Liquid Mixtures Containing High Order Alkanes (C17) And 1-alkanols At Different Temperatures	Sheeraz Akbar , Mahendra Kumar	Physics	211-213
69.	Assessment Of Knowledge About Health Services Available At Subcentre Level Among Village Inhabitants	Balpreet Singh , Jayanti Dutta	Public Health	214-215
70.	Effect Of Yogic, Aerobic And Laughter Exercises On Body Composition (An experimental study)	Dr. Manjappa. P, , Dr. Shivarama Reddy. M	Sports	216-220
71.	Age At Menarche In Physically Active And Non Active Urban Girls Of Patiala District	Jyoti Sharma , Dr. Ajita	Sports Science	221-222
72.	Use Of Ranks For Analysis Of Groups Of Experiments	Dr. Vanita K Khobarkar , Dr. S. W. Jahagirdar, Dr. N. A. Chaube	Statistics	223-225

Volume : 1 | Issue : 4 | January 2012 ISSN - 2249-555X

Research Paper Medical Science

Pneumococcal Septic Arthritis in an Infant A Case Report

* . Dr. Vrishali A Muley ** Dr. Dnyaneshwari P Ghadage *** . Dr. Arvind V Bhore

* Professor, Department of Microbiology, Smt. Kashibai Navale Medical College and General Hospital, Pune

** Professor and Head, Dept. of Microbiology, Smt. Kashibai Navale Medical College and General Hospital, Pune

*** Dean, Smt. Kashibai Navale Medical College and General Hospital, Pune

ABSTRACT

Traditionally, Streptococcus pneumoniae is considered as a relatively uncommon cause of septic arthritis. Here, we describe a case of 6 months old infant who presented with septic arthritis of left knee joint. The purulent fluid aspirated from the joint & blood revealed Streptococcus pneumoniae on culture. No predisposing or underlying medical condition was found associated with infection.

Keywords : Streptococcus pneumoniae; septic arthritis; infant

Introduction:

Streptococcus pneumoniae is a gram positive diplococcus that frequently causes pneumonia, sinusitis, and otitis media, as well as more invasive diseases, such as sepsis, meningitis, arthritis, and a variety of other infections. High morbidity and mortality caused by pneumococcal infection in children and adults have been reported.1

The incidence of pneumococcal infection is high in neonates, infants, and toddlers, low in adolescents and young adults, and then increases again in the elderly.1

Pneumococcal septic arthritis is described as “rarely encountered” or “unusual”. However, Streptococcus pneumoniae causes septic arthritis more often than is generally thought.2 We describe the case of septic arthritis caused by Streptococcus pneumoniae in an infant.

Case Report:

A previously healthy 6 months old female child was admitted to orthopaedic ward complaining of swelling, pain & immobility of the left knee since 7 days. The infant had no significant medical or surgical history. She had no allergies. Physical examination revealed a well developed & well nourished infant. She was alert and in mild distress.

Vital signs included the following:

Temperature 38 oC, pulse rate: 136/min. and respiratory rate: 32/min.

Neurologic, cardiovascular, pulmonary and abdominal examinations revealed normal findings.

Local examination revealed diffuse swelling throughout the left lower extremity extending from midfemoral area to left foot with focal swelling near the left knee. The left leg was painful to manipulation. The isolated movement of left knee was limited. Digital pulses were present. There were no signs of trauma.

Laboratory values were: Haemoglobin - 12 gm/dl, leukocyte count 22400/cumm with 66% neutrophils, 30% lymphocytes, 2% monocytes, 2% Eosinophils, platelet count 590000/cumm. The erythrocyte sedimentation rate and C-reactive protein (CRP) were elevated at 63 mm/hour and 62 mg/L respectively.

Radiograph of left femur and left knee showed soft tissue swelling without any evidence of fracture or bone involvement.

Approximately 2-3ml of grossly purulent fluid was aspirated and subjected to microbiological examination- Gram stain, culture and antibiotic sensitivity testing. Gram's stain revealed gram-positive cocci in pairs. At the same time blood is also subjected to culture. Fluid and blood grew Streptococcus pneumoniae on culture and both the strains found sensitive to penicillin and third generation cephalosporins.

Empirical intravenous antimicrobial therapy consisting of Amikacin and Augmentin was instituted before the determination of antibiotic susceptibilities.

The infant had surgical irrigation and debridement of the left knee. Frank pus was aspirated with an elevated cell count but exploration of knee joint revealed no signs of chondral or osseous damage.

Postoperatively the patient remained afebrile for 48 hours and CRP decreased after 6 weeks. Range of motion and function of left knee also returned to normal on follow up examination.

Discussion:

Infections by Streptococcus pneumoniae cause substantial morbidity worldwide. It has been reported that this bacterium causes more than 50% of cases of community-acquired pneumonia admitted to hospitals and 2040% of all pyogenic meningitis.3 Septic arthritis in paediatric population can occur from infection by several bacteria including Staphylococcus aureus, Group A Streptococcus, Neisseria meningitidis, Streptococcus pneumoniae, Neisseria gonorrhoeae, Klebsiella and Staphylococcus epidermidis. [4]

Septic arthritis caused by S. Pneumoniae has traditionally been thought to occur infrequently. However literature suggests it may account for 6-10% cases of septic arthritis. [5]

The first case of Streptococcus pneumoniae septic arthritis was reported in 1888. [6] The incidence of septic arthritic in children varies from 1.2% to 5.5%.[7]

In the present case, the age of the child was 6 months. Literature suggests that the invasive pneumococcal infections are frequently seen in children aged less than 2 years.

71 out of 156 children with invasive pneumococcal infection in an Invasive Bacterial Infection Surveillance (IBIS)[3] study in India and 6 out of 7 children having pneumococcal septic arthritis in another study from Nottingham, United Kingdom,[7] were younger than 2 years.

In children, monoarticular involvement is seen. Involvement of the hip joint is most common followed by involvement of the knee, elbow and ankle with decreasing frequency.[2, 7] In the present case, infant presented with left knee joint involvement.

For septic arthritis to develop there is usually a primary focus to begin with, common sites for *S. Pneumoniae* being pneumonia and meningitis. From there haematogenous spread to the joint can occur.[5]

In young infants, the primary focus of infection may occasionally be osteomyelitis in the metaphysis or epiphysis, which may then spread to the adjacent joint.[7]

However, in most of the studies no primary focus has been identified.[2,4,7] It is documented since 1914 that pneumococcal arthritis may be "primary,". Probably, septic arthritis occurs because of seeding of the joint with organism during transient bacteraemia from a mucous membrane source.[2] Cell surface components and extracellular products facilitate streptococcal tissue invasion.[8]

While *Streptococcus pneumoniae* is often part of the normal nasopharyngeal flora of healthy children, increased pathogenicity of pneumococci in the paediatric population may be due to low titres of type-specific opsonocytophagic antibody.[4] In the present case, the child was healthy previously and no focus of pneumococcal infection could be detected.

According to the literature, risk factors identified in children for pneumococcal septic arthritis are sickle cell anemia, hemophilia, HIV infection, and X-linked agammaglobulinaemia, asplenia, splenosis, deficiencies in humoral (B cell) immunity, and complement deficiencies.[1, 2] However, no underlying predisposing medical condition was found in the present case. Similar reports have been documented by Ispahani etal and Lane etal.[4,7]

The clinical significance of penicillin resistance in the pneumococcus is unclear. The prevalence of penicillin resistant *Streptococcus pneumoniae* has steadily increased throughout the world. 33% of *Streptococcus pneumoniae* isolates within United States have some degree of resistance to penicillin.[4] However, the studies did not show an increase in mortality that was associated with high level pneumococcal beta lactam resistance.[2] Penicillin resistance is rare in India but antimicrobial resistance patterns will require continued monitoring.[3] In the present study, isolate of *Streptococcus pneumoniae* was found susceptible to Penicillin and third generation Cephalosporins.

The review study[2] shows that 89% of the serotypes of pneumococcal isolates causing septic arthritis were represented in the 23-valent pneumococcal vaccine. Many cases of pneumococcal septic arthritis are, therefore, potentially vaccine preventable. In the face of invasive pneumococcal infection and the rising incidence of pneumococcal strains resistant to ≥1 antimicrobial agents, consideration should be given to greater use of the existing 23-valent polysaccharide vaccine.[7] The infant in the present case was not vaccinated against *Streptococcus pneumoniae*.

In most of the reports of pneumococcal septic arthritis[2, 4, 7] the children had good outcomes compared to the poor outcomes of septic arthritis caused by *Staphylococcus aureus*[2] It is also seen that whatever be the treatment intervention (surgical incision and drainage, arthrocentesis, or arthroscopic drainage), the outcome remained similar. Intra-articular antibiotics are not recommended because of the risk of developing chemical synovitis.[2] The 6 months old infant in the present study also responded well to antibiotics & surgical debridement and regained back the left knee joint function and mobility.

In summary, although pneumococcal arthritis was thought to be uncommon, the till date reports suggest that the pneumococcus is a relatively common cause of septic arthritis. It should not only be considered in cases of concomitant pulmonary and/or meningeal and joint infection, especially in the presence of predisposing factors but it is also an important cause of septic arthritis in an infant which is healthy and without any associated predisposing medical condition. Due consideration is needed to be given to the greater use of the existing 23-valent polysaccharide vaccine.

REFERENCES

1. Chang-Hsien Yu, Nan-Chang Chiu, Fu-Yuan Huang. Invasive Pneumococcal Infection In Children. Southeast Asian Journal of Tropical Medicine & Public Health, Vol 32 No. 1 March 2001, 126-31. | 2. John J. Ross, Charles L. Saltzman, Philip Carling, and Daniel S. Shapiro. Pneumococcal Septic Arthritis: Review of 190 Cases. Clinical Infectious Diseases 2003; 36:31927 | 3. Kurien Thomas, Invasive Bacterial Infection Surveillance (IBIS) Group, International Clinical Epidemiology Network (INCLEN). Prospective multicentre hospital surveillance of Streptococcus pneumoniae disease in India. Lancet, 1999; 353: 1216-21. | 4. Lane, Joshua E.; Moore, Christopher C.; Beckish, Michael L.; Stephens, Jeffrey L. Isolated Septic Arthritis Caused by Penicillin-Resistant Streptococcus pneumoniae . Southern Medical Journal. 94(4):429-431, April 2001. | 5. Andrew O'Brien, Mike Roberts, George Ampat, Judith Bowley Streptococcus Pneumoniae Infection Of The Sacro Iliac Joint A Case Report And Literature Review. Journal of Orthopaedics. 2008;5 (1)e9. | 6. I. Baraboutis and A. Skoutelis. Streptococcus pneumoniae septic arthritis in adults. Clinical Microbiology and Infection. 2004; 10: 10371039 | 7. P. Ispahani, V. C. Weston, D. P. J. Turner,and F. E. Donald. Septic Arthritis Due to Streptococcus pneumoniae in Nottingham, United Kingdom, 19851998. Clinical Infectious Diseases. 1999;29:14504. | 8. Amit S Verma and Dorian Dwarika. Reactive arthritis developing after pneumococcal conjunctivitis: a case report. Journal of Medical Case Reports 2007, 1:2.|

Sara Publishing Academy
Indian Journal Of Applied Research
Journal for All Subjects

Editor,
Indian Journal Of Applied Research
8-A, Banans, Opp. SLU Girls College,
New Congres Bhavan, Paldi, Ahmedabad-380006.
Contact.: +91-9824097643 E-mail : editor@ijar.in

Printed at Unique Offset, Novatsing Rupam Estate, Opp. Abhay Estate, Tavdipura, Shahibaug, Ahmedabad