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Case Report

Paediatrics Section

A Neonatal Septic Arthritis Case Caused by *Klebsiella pneumoniae*: A Case Report

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ABSTRACT

Septic arthritis is encountered very rarely during the neonatal period and its diagnosis can delay because of atypical symptoms, thus it may lead to serious sequelae. The sequale can be prevented by early diagnosis and concomitant treatment. In neonates, pain can be experienced as a result of pseudoparalysis and of movement of the effected joints. A 17-day-old neonatal patient was brought to our hospital with complaint of unrest and then diagnosed with septic arthritis due to propagation of *Klebsiella pneumoniae* in joint fluid culture was represented because of the rarity of such a case.

Keywords: Atypical symptoms, Newborn, Pseudoparalysis

CASE REPORT

A female baby with birth weight of 2700 grams born via normal spontaneous vaginal delivery at the 37th week of pregnancy of a 20-year-old mother's third pregnancy was consulted to our hospital with complaints of unrest, limitation and pain of motion in left leg. According to physical examination her general condition was good with a body temperature of 36.4°C, however, there was an increase in temperature and limitation of motion in left hip joint. In the laboratory examination following results were obtained: WBC 19,800/mm^3, C-reactive-protein (CRP); 4.94 mg/L, erythrocyte sedimentation rate (ESR); 100 mm/h 86% polymorphonuclear leukocytes in peripheral blood smear (PMNL). Effusion was detected in the left hip, by means of ultrasonograhic examination of the patient with normal graphy of left hip joint. A 5 x 162 pieced leukocytes were identified in the synovial fluid examination. In the gram staining, 10-12 PMNL and a large number of gram negative bacteria with bacilli morphology. Because of the reason that the complaints of patient had been continuing for more than 4 days, irrigation with arthrotomy and debridement were performed by the department of orthopaedics and the joint was encased in the joint plaster splint. Taking into consideration the fact that *Staphlococcus aureus* is the most common pathogen factor in childhood septic arthristis that occur in all age groups, the treatment was initiated with ampicillin-sulbactam combination and parenteral cefotaxime at a dose of 100 mg/kg/dose and 50 mg/kg/dose, respectively. Following isolation of *Klebsiella pneumonia* in joint fluid culture, in accordance with culture antibiogram results, transition to the treatment with parenteral meropenem at a dose of 20 mg/kg/dose and amikacin at a dose 15 mg/kg/dose was performed.

In the first week of treatment, a reduction in CRP and white blood cell count, then after observing a clinical improvement, the patient was discharged from hospital 4 weeks later and was treated as an outpatient. In the physical examination, recovery of joint movements was detected and the general condition of the patient fully improved without sequelae.

DISCUSSION

Acute septic arthritis of the joints in the neonatal period was late when microorganism haematogenously spread is considered in rare treat infections cause morbidity mortality [1-4]. In acute septic arthritis of joints in the neonatal period, the infection is the main cause of the morbidty and mortality when getting late to treat the haematogenously spread of the rare microorganisms.

The metaphysis and joint space are in relationship because of the fact that within the first 12 months of the life, presence of capillaries originated from metaphysis in long bones that pass the epiphysis line vertically. Therefore, septic arthritis occurs frequently along with osteomyelitis during the neonatal period [4,5]. It was also reported that in neonates with septic arthritis and osteomyletis, involvement of lower extremities (70-80%) are observed more frequently than that of lower extremities (10-20%) [6,7]. In the formation of neonatal septic arthritis the risk factors which are connected to pregnancy and labour such as prematurity, low birth infant weight, asphyxy, bacteraemia and intravenous or umbilical catheter are the leading factors [8,9]. Among the described risk factors for the development of neonatal septic arthritis, case of prematurity and vitamin K injection, and heel prick test was performed in order to screen the metabolic diseases. In the presented case report the involved joint was left hip joint.

There may be a delay in the treatment because the diagnosis of septic arthritis in the neonatal period [10]. It was exhibited with the conducted studies that the earliest detection of changes in the joints and bones in radiography is 7-16 days after the beginning of infection [11,12]. The most important clinical findings are swelling in soft tissue and pseudoparalysis [10,13].

Clinically, soft tissue swelling, pseudoparalysis of the most important clinical findings [10,13] have no fever and cannot seem half as sick newborns. No fever is experienced in the half of the neonates and no sign of disease might be observed, and also in these patients most of the laboratory and X-ray findings appear to be normal. There was no fever in our patient but uneasiness and pain which occurred from the movement of extremity were present. In order of frequency, *S. Aureus*, group B *streptococcus* and gram positive enterococcus are the most frequently determined significant pathogens in neonatal septic arthritis.

Before the world-wide immunization with conjugate vaccines, *Hemophilus influenza* type b was responsible for over half of all cases of bacterial arthritis in infants [10]. In recent years, *Klebsiella pneumoniae* is reported to be the most common cause of the nosocomial infections in which the infection frequency with gram negative bacteria has increased [14]. Length of hospitalization of the patient was 2 days after the labour. During the hospitalization duration of the patient, the performed invasive procedures are among the preventable risk factors, special care should be taken for sterilization during the venesection and other invasive operations. The examination of purulent fluid is accepted as a gold standard

for detection of microorganism in gram staining and for definitive diagnosis of the propagation of microorganism in the culture [15,16]. However, if the clinical and laboratory test results refer to septic arthritis in the patient is accepted as sufficient if there is not a propagation in joint aspiration culture or in blood culture. After diagnosis with septic arthritis, the antibiotic treatment was initiated for patient with limitation of join tmovements due to pain and with positive infection markers. According to a study of Lyon and co-workers the rate of patient with culture negative septic arthritis was reported to be 18-48% [16]. In a similar study, it is reported that only in 52-82% of the septic arthritis cases manated from bacterial origin [16]. We concretised our diagnosis by producing of *K.pneumoniae* from joint aspiration fluid of the patient. The elevated levels of ESH and CRP are very sensitive for bone and joint infections but non-specific. The follow–up procedure of ESH and CRP levels can be used to assess the response to treatment and to determine the complications. The elevated ESR level in our patient was quite remarkable. After treatment period the ESR levels returned to its normal levels and there was no elevation in the control.

CONCLUSION

As a result, even though without any prior history, in the neonatal period the infants with a good general condition who are brought with the complaints of pseudoparalysis or uneasiness with joint motion and restricted mobility, septic arthritis should be kept in my mind. If septic arthritis is not diagnosed and treated early, it is one of the most dangerous in terms of infection sequelae. For this reason, although there is no propagation in the culture, if clinical and other laboratory results are the direction of septic arthritis, taking a sure such as drainage with arthrotomy, administration of appropriate antibiotics, determination of sequales, planning of suitable treatment, and long term follow-up at least until the end of adolescence, would prevent children from the life long disability.

REFERENCES

[1] Kavas E, Gökmen Yıldırım T, Bakal N, Daban Kolsuz L, Akar S, Ovalı HF, et al. Akut Osteomyelitli Bir Yenidoğan Olgusu. *Zeynep Kamil Tıp Bülteni*. 2015;46:2;84-87.

[2] Cooperman DR, Thompson GH. Bone and joint infections. In: Martin RJ, Fanaroff AA, Walsh MC. Neonatal- PerinatalMedicine Diseases of the Fetus and Infant, 9th ed. 2011. 6:1778- 1780.

[3] Zübarioğlu AU, Uslu A, Bülbül A, Dursun M, Çelik M, Türkoğlu E, et al. Yenidoğan Döneminde Akut Osteoartrit: Olgu Sunumu. *The Journal of Pediatric Research*. 2014;1(2):95-98.

[4] Overturf GD. Bacterial Infections of the Bones and Joints. In: Remington JS, Klein JO, Wilson CB, and Baker CJ. InfectiousDiseases of the Fetus and Newborn, 7th ed. 2010. 8: 296-306.

[5] Bünyamin B, Cevit Ö, Tanzer F, Türkay S. Yenidoğan osteomiyeliti. Türkiye Klinikleri *J Med Sci*. 1996;16:90-92.

[6] Al Saadi MM, Al Zamil FA, Bokhary NA, Al Shamsan LA, Al Alola SA, Al Eissa YS. Acute septic arthritis in children. *Pediatr Int*. 2009;51:377-80.

[7] Dessi A, Crisafulli M, Accossu S, Setzu V, Fanos V. Osteoarticular infections in newborns: diagnosis and treatment. *J Chemother*. 2008;20:542-50.

[8] Coto Cotallo GD, Solis Sanchez G, Crespo Hernandez M, Ramos Aparicio A, Bousono García C, Orejas R-Arango G. Neonatal osteomyelitis. Study of a series of 35 cases. *An Esp Pediatr*. 1990;33:429-34.

[9] Asmar B. Osteomyelitis in the neonate. *Infect Dis Clin North Am*. 1992;6:117-32.

[10] Nade S. Acute septic arthritis in infancy and childhood. *J Bone Joint Surg*. 1983;65:234-41.

[11] Matic A, Gajdobranski D, Petkovic L, Velisavljev FG, Ristivojevic A. Acute osteomyelitis and septic arthritis of the shoulder in premature neonates--report of two cases. *Med Pregl.* 2012;65(1-2):59-64.

[12] Sandal G, Uras N, Akar M, Oguz SS, Erdeve O, Dilmen U. Iliac osteomyelitis in a newborn: a case report. *Journal of Pediatric Orthopaedics B*. 2012;21:404–06.

[13] Winkler S, Dai L, Hauck F, Dinger J, Pessler F. Primary osteomyelitis of the clavicle in the newborn period. *Pediatr Infect Dis J*. 2012;31(2):211.

[14] Adeyemo AA, Akindele JA, Omokhodion SI. Klebsiella septicaemia, osteomyelitis and septic arthritis in neonates in Ibadan, *Nigeria. Ann Trop Paediatr*. 1993;13:285-89.

[15] Kabak S, Halici M, Akçakuğ M, Çetin N, Narin N. Septik arthritis in patients followed-up in neonatal intensive care unit. *Pediatr Int*. 2002;44:652-57.

[16] Lyon RM, Evanich JD. Culture-negative septic arthritis in children. *J Pediatr Orthop*. 1999;19:655-59.

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