

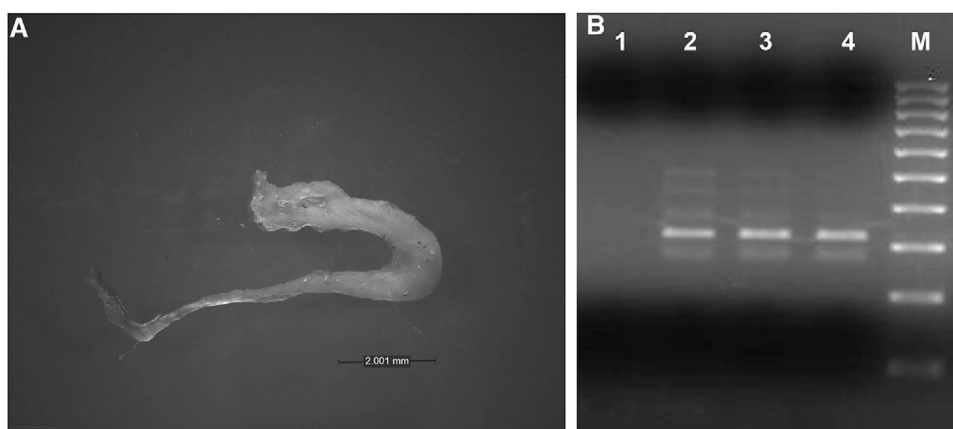


Fig. 1. (A) One of the fragments of the worms removed from the subconjunctival tissue of the patient. (B) Multiplex PCR amplification of the DNA extracted from the worms removed from the patient. Lane 1: negative control; lane 2: *D. repens* positive control; lanes 3 and 4: samples obtained from the worms surgically removed from the patient; M: molecular marker, 100–1000 pb.

cases of subcutaneous/ocular dirofilariasis associated to MEN and the spreading of *D. repens* into previously non-endemic areas in Spain.

Unfortunately, we do not have images of the nodules prior to excision, which would have allowed a differential diagnosis, however the initial suspicion was ocular dirofilariasis since the worm was appreciated with the naked eye.

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2529-993X/

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Neonatal epididymo-orchitis with pyoceles caused by *Escherichia coli*: Successful treatment with antimicrobial therapy alone



Orquiepididimitis neonatal asociada a piocelos por *Escherichia coli*: tratamiento efectivo con antibioterapia exclusiva

Evaluation of acute scrotum in neonates is a surgical emergency since the most common diagnosis is testicular torsion. Other causes, such as epididymo-orchitis (EO), are very uncommon during neonatal age.¹ We present a neonatal EO and review all similar cases reported in the literature.

A 19-day-old male was brought to the Emergency Department with an erythematous and firm swelling of his left scrotum associated with irritability and fever that had begun five hours before. He had been born healthy at 38 weeks of gestational age and prenatal ultrasounds were normal. Clinical examination revealed a firm and erythematous left hemiscrotum. Doppler ultrasound findings were compatible with bilateral EO, mainly in the left hemiscrotum with a right hydrocele and a left pyocel. Laboratory examinations showed a white blood cell count of $13,700 \text{ mm}^{-3}$ (neutrophils 55%), C-reactive protein 132 mg/L and procalcitonin 4.5 ng/mL. Urine and

cerebrospinal fluid (CSF) analysis were normal. He was admitted and empirical treatment with intravenous ampicillin and cefotaxime was started. After *Escherichia coli* was isolated in urine and blood cultures, ampicillin was discontinued. CSF culture was sterile. Renal ultrasound was normal. Fever resolved within 24 h. A new scrotal ultrasound after nine days of treatment showed improvement in inflammatory changes and pyocel resolution. He was discharged after ten days of intravenous cefotaxime with an almost full recovery of scrotal inflammatory signs.

In neonates presenting with acute scrotum it is mandatory to distinguish between testicular torsion and other conditions using Doppler ultrasound. Compared with testicular torsion, the majority of cases of EO present with fever, increased acute phase reactants and increased blood flow.²

Only 11 cases of EO with a microbiological isolation in patients below 1 month of age have been reported in the literature in the last 30 years (1987–2016; Table 1).^{2–4} Hematogenous spread appears to be the causative mechanism in eight cases. Direct extension from a urinary tract infection has been described in one patient.

Although uropathy can predispose to EO,⁵ only three cases were associated with genitourinary malformations. The pathogenesis

Table 1

Characteristics of neonatal epididymitis/epididymo-orchitis with microbiological isolation published in the last 30 years.

Author, year	Age (days)	Complication	Drainage	Blood culture	Urine culture	Drainage culture	Initial antibiotic
Present case	19	Pyocele	No	<i>E. coli</i>	<i>E. coli</i>	No	Ampicillin + Cefotaxime
Djordjevic, 2016	7	Pyocele	S.E.	Enterobacter spp.	N.R.	Enterobacter spp.	Meropenem + Amikacin
Morris, 2016	29	Pyocele	N.A. + S.E.	<i>E. coli</i>	No	Sterile	Piperacillin-tazobactam
Goirand, 2013	31	Pyocele	S.E.	<i>S. agalactiae</i>	Sterile	N.R.	Cefotaxime + Rifampicin
Stark, 2012	16	Abscess	T.D.	<i>E. coli</i>	Sterile	<i>E. coli</i>	Vancomycin + Piperacillin-tazobactam
Kabiri, 2010	7	Pyocele	N.A.	<i>P. aeruginosa</i>	Sterile	<i>P. aeruginosa</i>	Imipenem + Amikacin
Di Renzo, 2010	14	Bilateral abscess	S.E.	<i>K. pneumoniae</i>	N.R.	<i>K. pneumoniae</i>	N.R.
Barret, 2008	16	No	S.E.	<i>E. coli</i>	Sterile	No	Ampicillin + Cefotaxime
Chiang, 2007	26	N.R.	N.C.	Sterile	<i>E. coli</i>	N.R.	N.R.
Chiang, 2005	6	Pyocele	N.A.	<i>E. coli</i>	Sterile	<i>E. coli</i>	Cefotaxime + Other antibiotic
Chung-Bin, 1997	24	Pyocele	S.E.	Sterile	Sterile	<i>S. enteritidis</i>	Ampicillin + Gentamicin
Hakim, 1992	31	Pyocele	S.E.	Sterile	Sterile	<i>Salmonella derby</i>	Ampicillin + Gentamicin

N.R. = not reported; N.A. = needle aspiration; S.E. = surgical exploration; T.D. = tube drainage.

is unclear in 2 patients with *Salmonella* isolation in scrotal pus but sterile blood cultures. Testicular involvement is commonly preceded by signs of severe infection and scrotal inflammation usually develops after an initial clinical improvement. The most commonly isolated bacteria was *E. coli* in five patients.

Nine cases presented suppurative complications (seven pyoceles and two abscesses), which were drained in all cases. Drainage can optimize microbiological diagnosis to guide antibiotic therapy. However, in the reviewed cases, blood cultures were usually positive and drainage fluid culture was the only positive sample in 2/11 newborns. To our knowledge, this is the first report of non-surgical management of neonatal pyocele secondary to EO.⁶

Because of the high risk of bacteremia and systemic infection in neonatal EO, early diagnosis including Doppler ultrasound and a full sepsis workup before starting empiric antibiotic therapy seem to be necessary.

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