



**Figure 3.** *Perivascular infiltration of lympho mononuclear cells in medulla oblongata (Hematoxylin and Eosin stain; 40× Objec.)*

with 2 separate groups, one for genes *prfA* and *prs*, and the other four genes *Imo0737*, *Imo1118*, *ORF2819*, and *ORF2110*. The molecular serotyping using multiplex PCR revealed *prfA*, *prs*, *ORF2819*, and *ORF2110* genes from all isolates, indicating that the isolates belonged to *L. monocytogenes* serotype 4b.

### Antimicrobial susceptibility testing of *L. monocytogenes* isolates

All strains were tested for antimicrobial susceptibility by broth microdilution using the Sensititre® GPN3F dehydrated panel (Trek Diagnostic Systems, Cleveland, OH) following the manufacturer's instructions. The following antimicrobial agents were used for the *in vitro* microdilution broth testing protocol: penicillin, erythromycin, sulfamethoxazole/trimethoprim, chloramphenicol, tetracycline, daptomycin, streptomycin, tylosin tartrate,

quinupristin/dalfopristin, linezolid, nitrofurantoin, kanamycin, ciprofloxacin, vancomycin, lincomycin and gentamicin. The breakpoints used for the determination of the minimum inhibitory concentrations (MIC) using the broth microdilution method, were those recommended by Clinical & Laboratory Standards Institute (CLSI 2014) for closely-related bacteria (*Staphylococcus* spp., *Enterococcus* spp., *Streptococcus* spp.). There was one exception to this pattern, namely for penicillin for which specific *Listeria* breakpoints are defined. *Staphylococcus aureus* ATCC 29213 was used as quality control strain, with susceptibility testing results in the expected range.

All 18 *L. monocytogenes* strains tested were found to be susceptible to penicillin (MIC 0.5-1 µg/mL), erythromycin (MIC 0.25 µg/mL), tetracycline (MIC 1 µg/mL), ciprofloxacin (MIC 1 µg/mL), tylosin tartrate, sulfamethoxazole/trimethoprim, streptomycin, vancomycin, and gentamicin, but

**Table II.** MICs of 16 antimicrobial agents for *L. monocytogenes* isolates from ovine meningoencephalitis.

Antimicrobials	Number of isolates (n = 18) with MIC of (mg/l)															
	0.03	0.06	0.12	0.25	0.5	1	2	4	8	16	32	64	128	256	512	1024
Penicillin	-	-	-	2 (11.1)	14 (77.8)	2 (11.1)	-	-	-	-	-	-	-	-	-	-
Erythromycin	-	-	-	18 (100)	-	-	-	-	-	-	-	-	-	-	-	-
Tetracycline	-	-	-	-	-	18 (100)	-	-	-	-	-	-	-	-	-	-
Ciprofloxacin	-	-	-	-	-	18 (100)	-	-	-	-	-	-	-	-	-	-
Chloramphenicol	-	-	-	-	-	-	-	-	15 (83.3)	2 (11.1)	1 (5.6)	-	-	-	-	-
Sulfamethoxazole/ Trimethoprim	-	-	-	-	18 (100)	-	-	-	-	-	-	-	-	-	-	-
Daptomycin	-	-	-	-	-	-	11 (61.1)	7 (38.9)	-	-	-	-	-	-	-	-
Vancomycin	-	-	-	2 (11.1)	-	14 (77.8)	2 (11.1)	-	-	-	-	-	-	-	-	-
Streptomycin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18 (100)	-
Nitrofurantoin	-	-	-	-	-	-	-	-	-	-	-	18 (100)	-	-	-	-
Tylosin tartrate	-	-	-	-	-	-	-	16 (88.9)	2 (11.1)	-	-	-	-	-	-	-
Gentamicin	-	-	-	-	-	-	-	-	-	-	-	-	18 (100)	-	-	-
Quinupristin/ dalfopristin	-	-	-	-	12 (66.6)	5 (27.8)	1 (5.6)	-	-	-	-	-	-	-	-	-
Lincomycin	-	-	-	-	-	-	-	-	18 (100)	-	-	-	-	-	-	-
Linezolid	-	-	-	-	1 (5.6)	-	2 (11.1)	15 (83.3)	-	-	-	-	-	-	-	-
Kanamycin	-	-	-	-	-	-	-	-	-	-	-	-	17 (94.4)	-	-	1 (5.6)