

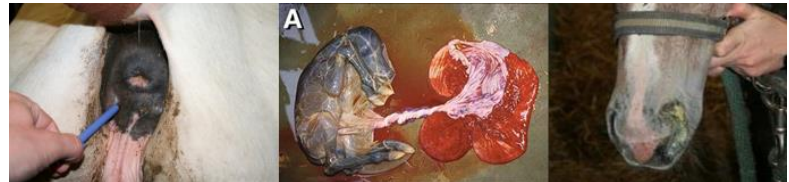
# A retrospective study on Equine Herpes Virus type-1 associated myeloencephalopathy in France (2008-2011)

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## BACKGROUND

Recognition of equine herpesvirus-1 associated myeloencephalopathy (EHM) can be troublesome (see Photos), but early recognition and knowledge on risk factors are considered primordial for outbreaks prevention and control.



## MATERIALS ET METHODS

Therefore this study describes 26 EHM cases reported through a passive epidemiosurveillance program in France from 2008-2011 and compares them to control cases (31 horses potentially suffering an infectious neurological disease, but negative for EHM) to identify diagnostic markers and risk factors using two sample Wilcoxon rank-sum test, Fisher's exact test, univariate and multivariate logistic regression.

## RESULTS

The fatality rate of EHM cases was 46% and the majority consisted of isolated cases. Most showed ataxia or paresis and a cauda equina syndrome, but the clinical picture was variable.

**Table 2.** Clinical variables of horses with equine herpesvirus-1 associated myeloencephalopathy and control horses

	EHM horses (26)			Control horses (31)			Statistical comparison		
	N	n	%	N	n	%	P value (two-sample Wilcoxon rank sum test)	OR	CI 95%
<b>Herd size</b> (number of horses; mean ± SD, range, n)	54.6 ± 33.7	range 2-100	n = 22	23.3 ± 31.9	range 1-150	n = 24	< 0.001		
<b>Herd activity</b>							1.000		
Riding school	9	24	38%	11	29	38%			
Training centre	0	24	0%	1	29	3%			
Breeding facility	5	24	21%	7	29	24%			
Pleasure riding / home	7	24	29%	11	29	38%			
<b>Vaccination status</b>									
EHV vaccinated	16	23	70%	10	30	33%	0.01*	4.57	1.42-14.71
EHV vaccination < 6 months before disease	10	21	48%	8	29	28%	0.15	2.39	0.73-7.78
Tetanus vaccinated	21	22	95%	22	30	73%	0.07*	7.64	0.88-66.43
<b>Factors related to viral spread</b>									
Other sick horses since 3 months	13	20	65%	10	27	37%	0.13	2.46	0.77-7.79
New horse introduced in herd	14	20	70%	5	26	19%	0.001*	9.80	2.50-48.41
Horse moved during last month	6	21	29%	7	27	26%	0.84	1.14	0.32-4.11
<b>Motif to call veterinarian</b> (multiple answers possible)									
Hyperthermia	4	20	20%	2	28	7%	0.20	3.25	0.53-19.82
Ataxia, paresis	10	20	50%	8	28	29%	0.77	2.50	0.75-8.30
Recumbence	5	20	25%	2	28	7%	NU	NU	NU
Lameness	0	20	0%	3	28	11%	NU	NU	NU
Other / non-specific neurological signs	3	20	15%	11	28	39%	NU	NU	NU
Other motif	2	20	10%	7	28	25%	NU	NU	NU

**Table 1.** Signalment of horses with equine herpesvirus-1 associated myeloencephalopathy and control horses

	EHM horses (26)			Control horses (31)			P value (two sample Wilcoxon rank-sum test)		
	N	n	%	N	n	%	P value (Fisher's exact test)	OR	CI 95%
<b>Age</b> (years; mean ± SD, range, n)	12 ± 4.5	range 3-20	n = 25	10.7 ± 6.5	range 0.3-26	n = 29	0.24		
<b>Breed</b>							0.03*		
Saddle horse	23	25	92%	18	28	64%			
Pony	2	25	8%	9	28	32%			
Draft horse	0	25	0%	0	28	0%			
Donkey	0	25	0%	1	28	4%			
<b>Sex</b>							0.72		
Mare	14	22	64%	15	31	48%			
Stallion	5	25	20%	5	31	16%			
Gelding	6	25	24%	11	31	35%			

**Table 3.** Clinical variables of horses with equine herpesvirus-1 associated myeloencephalopathy and control horses

	EHM horses (26)			Control horses (31)			Statistical comparison		
	N	n	%	N	n	%	P value (two-sample wilcoxon rank-sum test)	OR	CI 95%
<b>Rectal temperature</b> (°C; mean ± SD, range, n)	38.1 ± 1.6	range 35.0-40.8	n = 17	38.3 ± 1.0	range 37.0-40.5	n = 22	0.72		
<b>Fever</b>	11	21	52%	7	23	30%	0.14	1.46	0.73-8.63
<b>Respiratory signs</b>	8	18	44%	10	25	40%	0.74	1.23	0.37-4.03
<b>Abnormal posture</b>	5	21	24%	5	24	21%	0.81	1.19	0.29-4.85
<b>Recumbence</b>	10	22	45%	8	27	30%	0.26	1.98	0.61-6.43
<b>Abnormal consciousness</b>	7	16	44%	15	27	56%	0.38	0.60	0.19-1.90
<b>Abnormal behaviour</b>	12	22	55%	17	27	63%	0.55	0.71	0.22-2.22
<b>Abnormal head position</b>	2	18	11%	4	26	15%	0.69	0.69	0.11-4.22
<b>Cranial nerve affection</b>	8	21	38%	17	27	63%	0.09*	0.36	0.11-1.17
<b>Abnormalities cervical area</b>	11	19	58%	22	28	79%	0.13	0.38	0.10-1.35
<b>Ataxia / weakness</b>	11	12	92%	22	25	88%	0.96	0.95	0.14-6.45
<b>Cauda equina syndrome</b>	13	15	87%	12	25	48%	0.01*	6.14	1.43-26.35
<b>Death</b>	11	24	46%	6	23	26%	0.16	2.40	0.70-8.20

## CONCLUSIONS

Most showed ataxia, paresis and a cauda equina syndrome, yet presence of other neurological signs was variable. Statistical analysis identified the following variables to be significantly associated to EHM compared to controls: introduction of a new horse to the herd, cauda equina syndrome, larger herd size, saddle horses and month of occurrence. Risk factors were found to be similar to previous studies, therefore strengthening their significance to the spread of EHM.