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Jensen, Tim Kåre

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# CNS histopathology on 203 bovines with clinical suspicion of BSE in Denmark 2001 to 2016

Tim K. Jensen, Veterinary pathologist, PhD, DVM

The first case of Bovine Spongiform Encephalopathy (BSE) in Denmark was reported in 1992 in an UK imported Highland Cattle. Since 2000 a total of 18 indigenous BSE cases have been found in cattle. The last case was found in 2009 in a normally slaughtered 14 years old dairy cow.

The aim of this study was to summarize the pathological findings in 203 bovines with clinical suspicion of BSE in Denmark 2001 to 2016, the period with the author as main investigator.

The annual number of suspicions peaked in 2001 with 71 cases, followed by a gradual decrease until 2005. From 2006 and on-wards a mean number of 3 cases have been submitted. In the same period the total bovine population has decreased from 1.8 mil to 1.4 mil.

Two cases of BSE were diagnosed as listed in Table 1. The most prevalent differential diagnosis was listeriosis (n=109), characterized by multifocal, necrotizing, non-suppurative encephalitis confined to the brain stem region. Ten cases showed encephalitis characterized by low grade multifocal, non-suppurative cuffings, mainly in cerebrum and brain stem. Non specific etiology was suspected. In another twenty cases a specific diagnose was made, Table 1 and figures. Forty eight (24%) of the cases revealed no significant lesions, whereas eight cases were unsuitable due to autolysis.

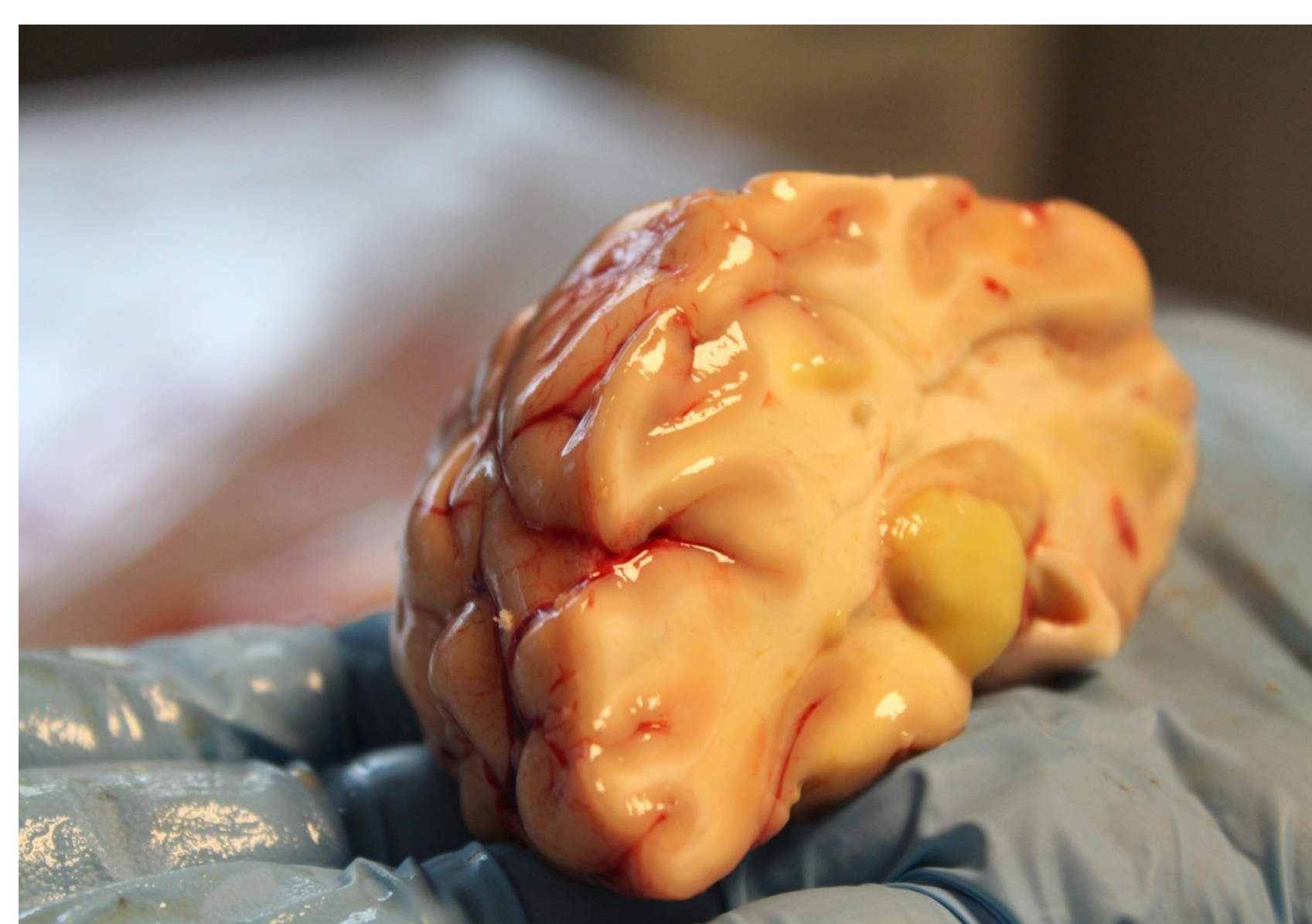
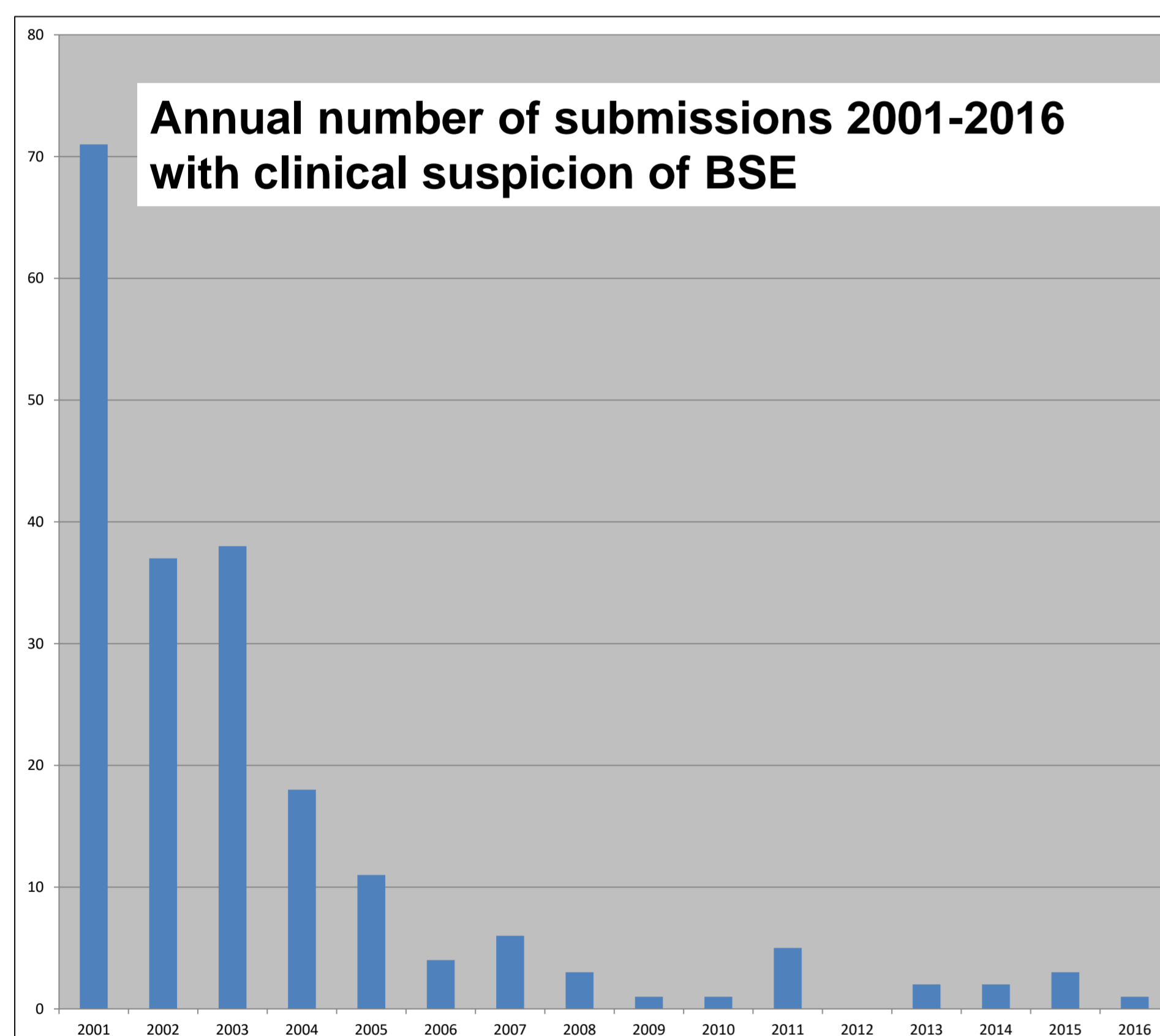
During 2001 to 2016 a total of 203 bovines were submitted to the institute with clinical suspicion of having BSE. In two cases BSE was confirmed. The most common differential diagnosis was listeriosis, found in 54% of the cases. Listeriosis was characterized by multifocal, necrotizing, non-suppurative encephalitis confined to the brainstem region.

Info: The annual average Danish dairy cattle population 2001 to 2016: 550.000.

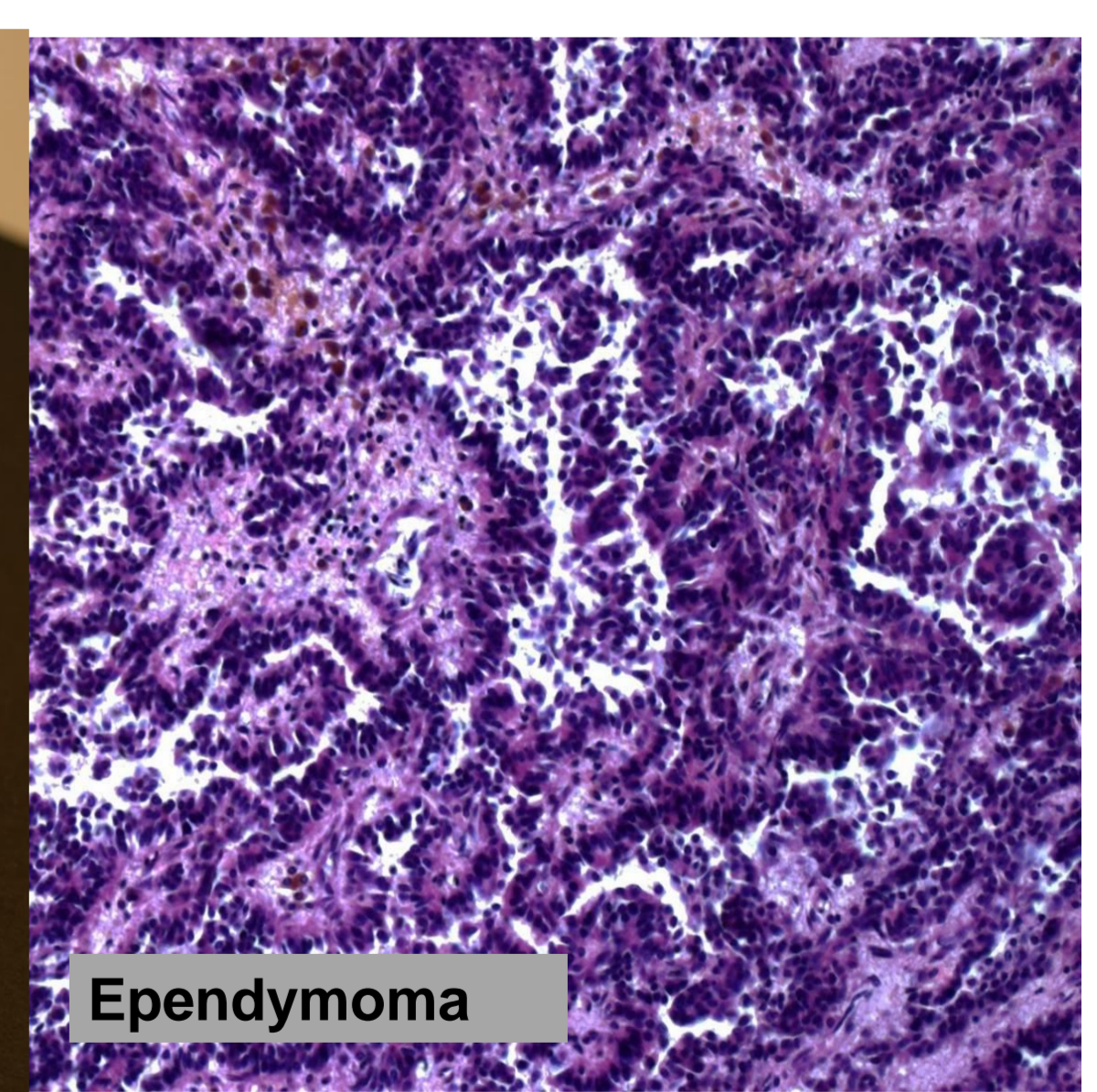
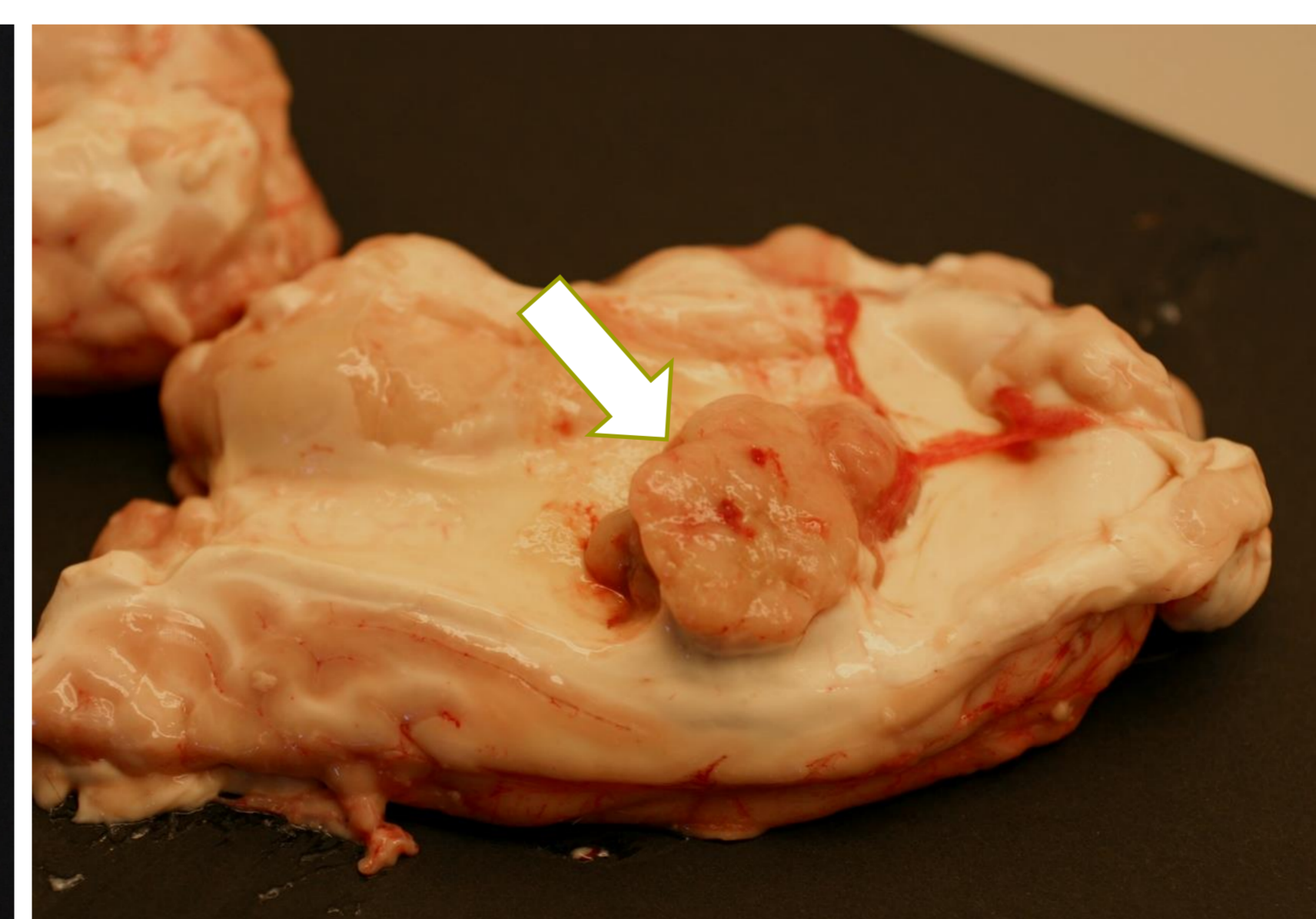
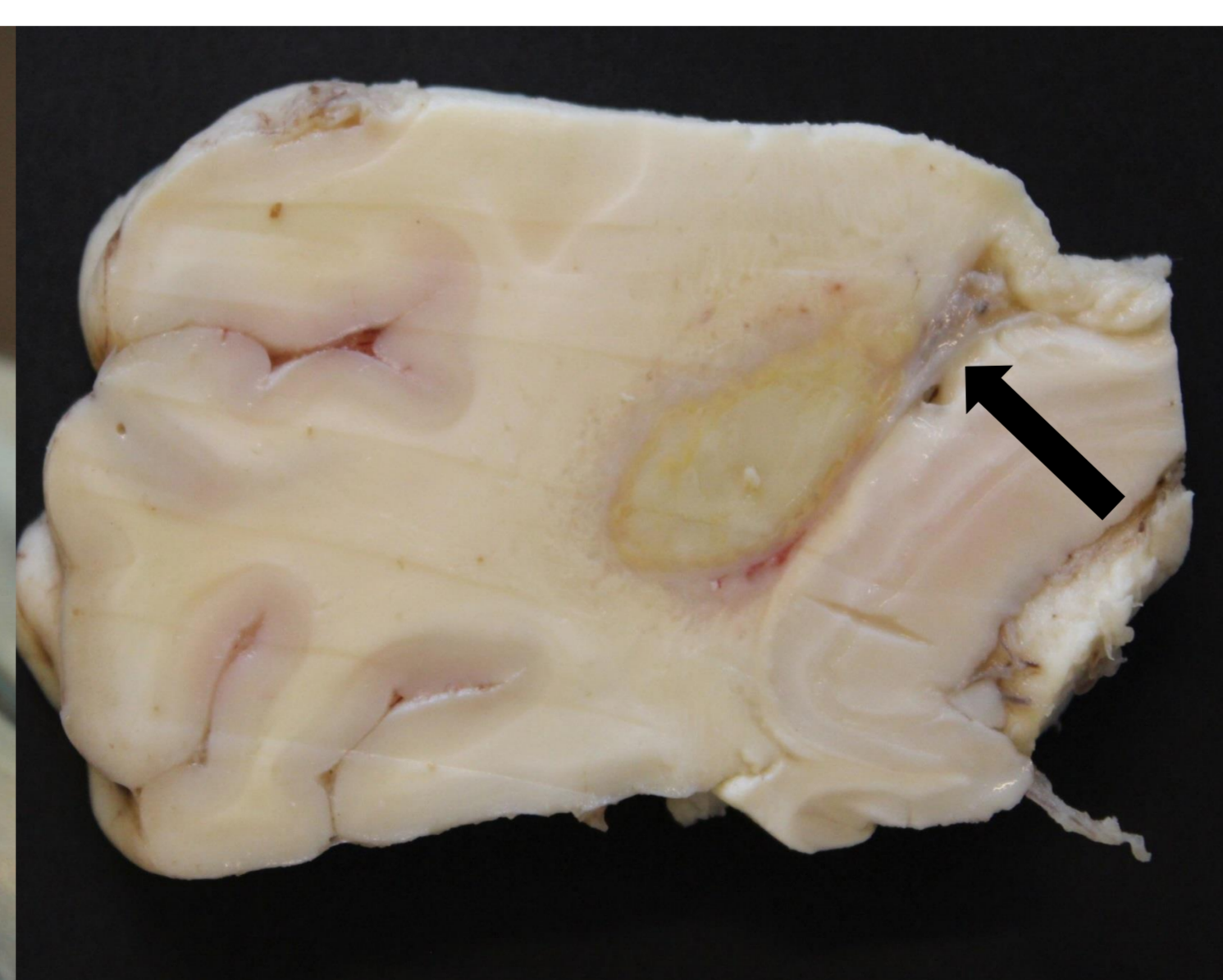


**Table 1. Differential diagnoses of bovines with clinical suspicion of BSE in Denmark 2001 to 2016**

Diagnosis \ Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Listeriosis	31	20	29	10	5	3	4	1			3		1		2		109
Lesions not found	25	9	7	2	2		1	1						1		1	49
Encephalitis	6	2	1	1													10
Unsuitable/autolysis	2	1		2	1					1				1			8
Hydrocephalus	1				1	1	1	1									5
Intracerebral oedema	1			1	2												4
Pituitary abscess	1	1		1													3
Cerebral abscess															1		1
Ependymoma			1								1						2
Subdural haemorrhage	2																2
Hepatic spongiform encephalopathy			1	1													2
<b>BSE</b>	<b>1</b>		<b>1</b>														<b>2</b>
Cerebellar necrosis and degeneration												1					1
Meningial lymphosarcoma			1														1
Malignant adenoma, pineal gland									1								1
Cerebral malacia			1														1
Neural storage disease	1																1
Number of submissions per year	71	37	38	18	11	4	6	3	1	1	5	0	2	2	3	1	203



Cerebral abscess, bilateral, not involving the ventricular cavities (arrow). By culture *Trueperella pyogenes* was identified. Right and left cerebral hemisphere.



Tumor (ependymoma), arising from the epithelial lining of the ventricular cavities, compromising the drainage of cerebrospinal fluid thereby causing hydrocephalus.