

恩睿康



**AFRICAN SWINE FEVER**

**非洲猪瘟**

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# African Swine Fever – 非洲猪瘟

- Highly contagious disease of wild and domestic suids  
野猪和家猪的高度传染性疾病
- High morbidity and mortality in acute hemorrhagic form  
急性出血形式的高发病率和死亡率
- Chronic forms exist among surviving populations.  
以慢性形式存在于幸存下来的猪群中
- DNA virus unrelated to Classical Swine Fever (CSF is RNA pestivirus)  
与典型猪瘟（RNA 瘟病毒属）无关的 DNA 病毒

# African Swine Fever – 非洲猪瘟

Reported in Kenya in 1920's

1920 年代发生于肯尼亚

Endemic in Sardinia, much of Africa

在撒丁岛（意大利），非洲大部分呈地方流行

Spread through Eastern Europe and Russia in recent years.

近几年扩散至东欧和俄罗斯

Current outbreak in China.

最近在中国出现

# ASFV

- Enveloped double-stranded DNA virus 170k to 190k bp.  
大小在 170k 到 190k bp 的双链折叠 DNA 病毒
- Transmitted by Ornithodoros soft ticks 由蜱属软蜱传播
  - tick to tick vertical transmission 蜱到蜱的垂直传播
  - Tick to pig, pig to tick horizontal vector spread. 蜱到猪，猪到蜱的水平传播
- Transmitted by direct contact 直接接触传播
- Transmitted by fomites 通过污染物传播  
Saliva, sputum, blood, urine, feces. 唾液，痰，血，尿，粪便
- Long time survival in pork products 在猪肉生产中可长期存活
  - Garbage feeding spreads the disease. 饲喂泔水传播



## Clinical signs of ASF 非洲猪瘟的临床症状

Incubation period 3 to 15 days. 潜伏期 3-15 天

Peracute, acute, subacute, chronic forms exist. 存在过急性，急性，亚急性和慢性形式

Survivors become lifelong carriers of the disease. 幸存者成为终生病毒携带者

Death is first sign in peracute form 死亡是急性形式的首要表现

Acute form – fever 40.5 -42°C, anorexia, depression, cyanosis, increased pulse and respiratory rate, leukopenia, thrombocytopenia. Vomiting, diarrhea, abortion.

急性形式 - 发烧 40.5-42° C，厌食，精神不佳，发绀，脉搏和呼吸频率增加，白细胞减少，血小板减少，呕吐，腹泻，流产。

# Clinical signs of ASF (subacute to chronic forms)

## 非洲猪瘟的临床症状（亚急性和慢性）

### Subacute form 亚急性

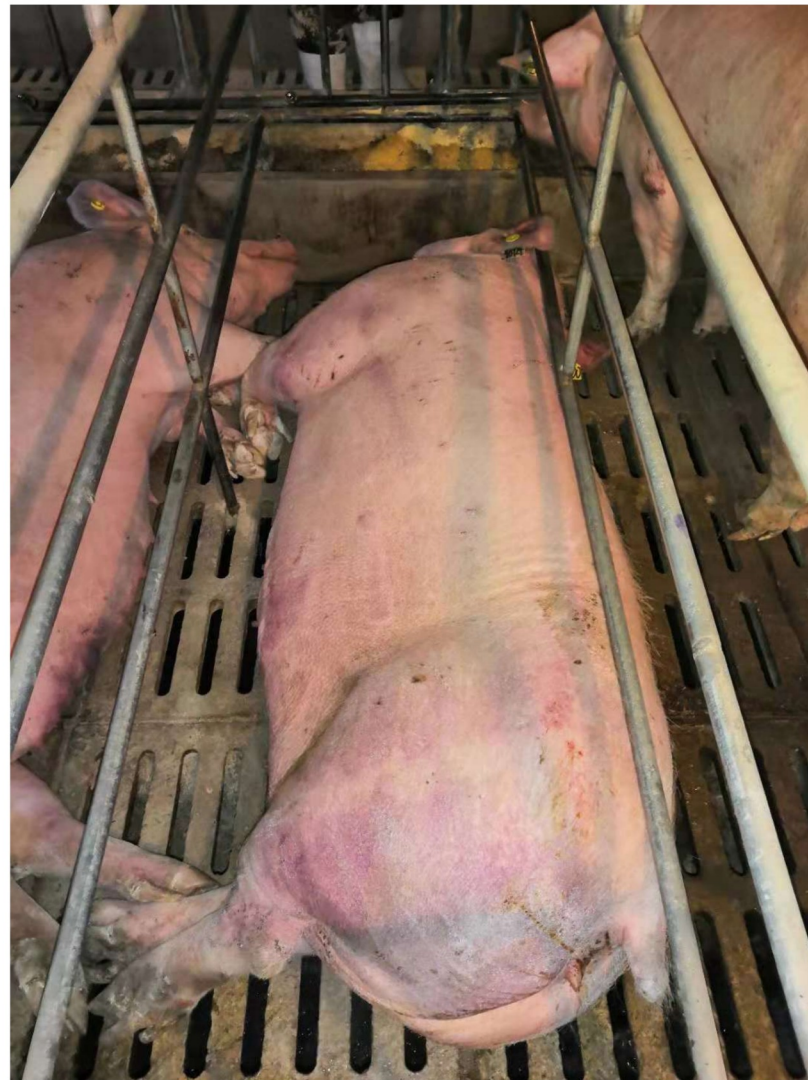
Slight fever, reduced appetite, depression, abortion.

低烧，食欲减退，精神不佳，流产

### Chronic form 慢性

Weight loss, irregular fever spikes, respiratory symptoms, skin necrosis, skin ulceration, arthritis, pericarditis, joint swelling.

消瘦，无规律发烧，呼吸症状，皮肤坏死，皮肤溃疡，关节炎，心包炎，关节肿大。





















Mortalities Peracute ASF

过急性非洲猪瘟  
引发的死亡



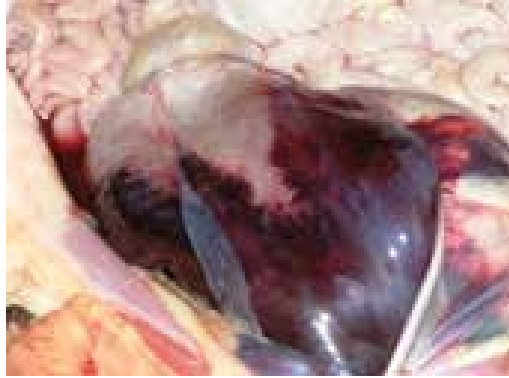
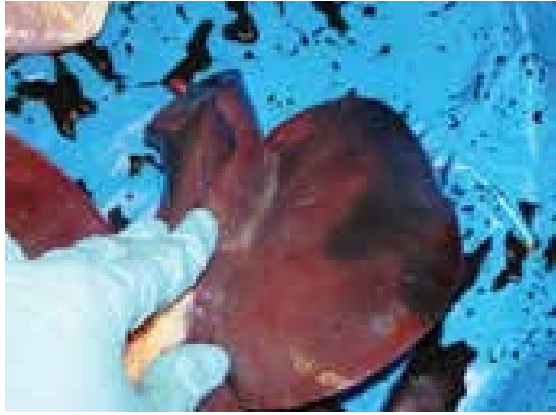


Chronic ASF  
慢性非洲猪瘟

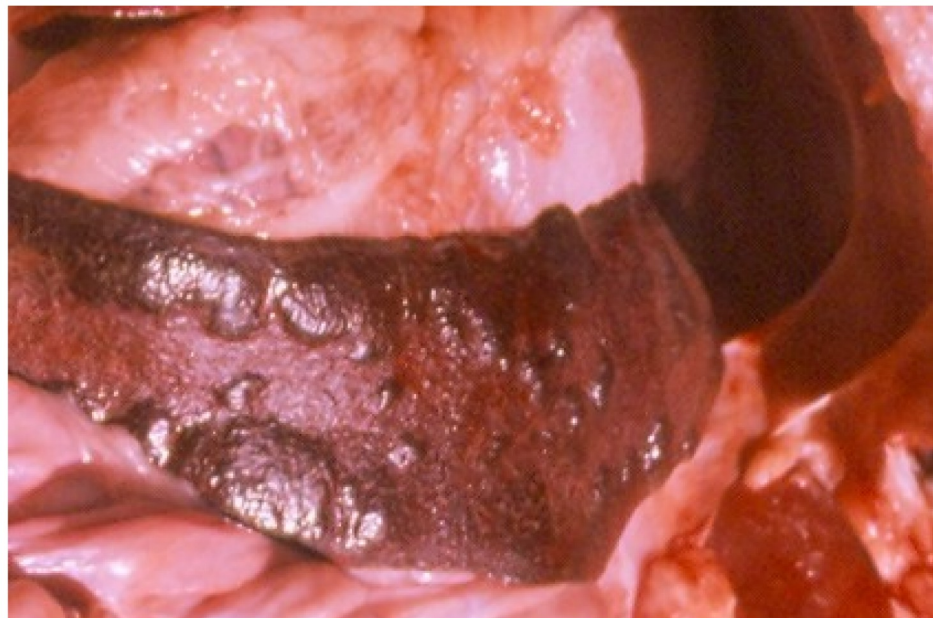




ASF may resemble CSF, Salmonellosis, or PCV2/3  
非洲猪瘟症状类似于典型猪瘟，沙门氏菌，或圆环 2/3



Lesions are primarily hemorrhagic lesions in multiple organs.  
组织损伤主要是多器官出血。

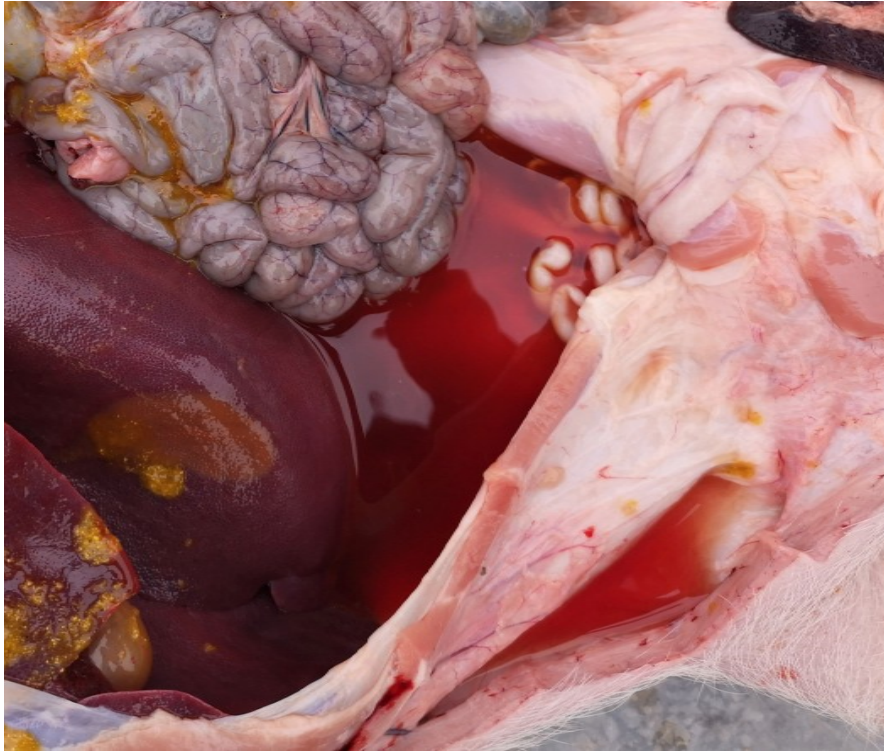


Spleen is enlarged, friable, and often contains infarcts.

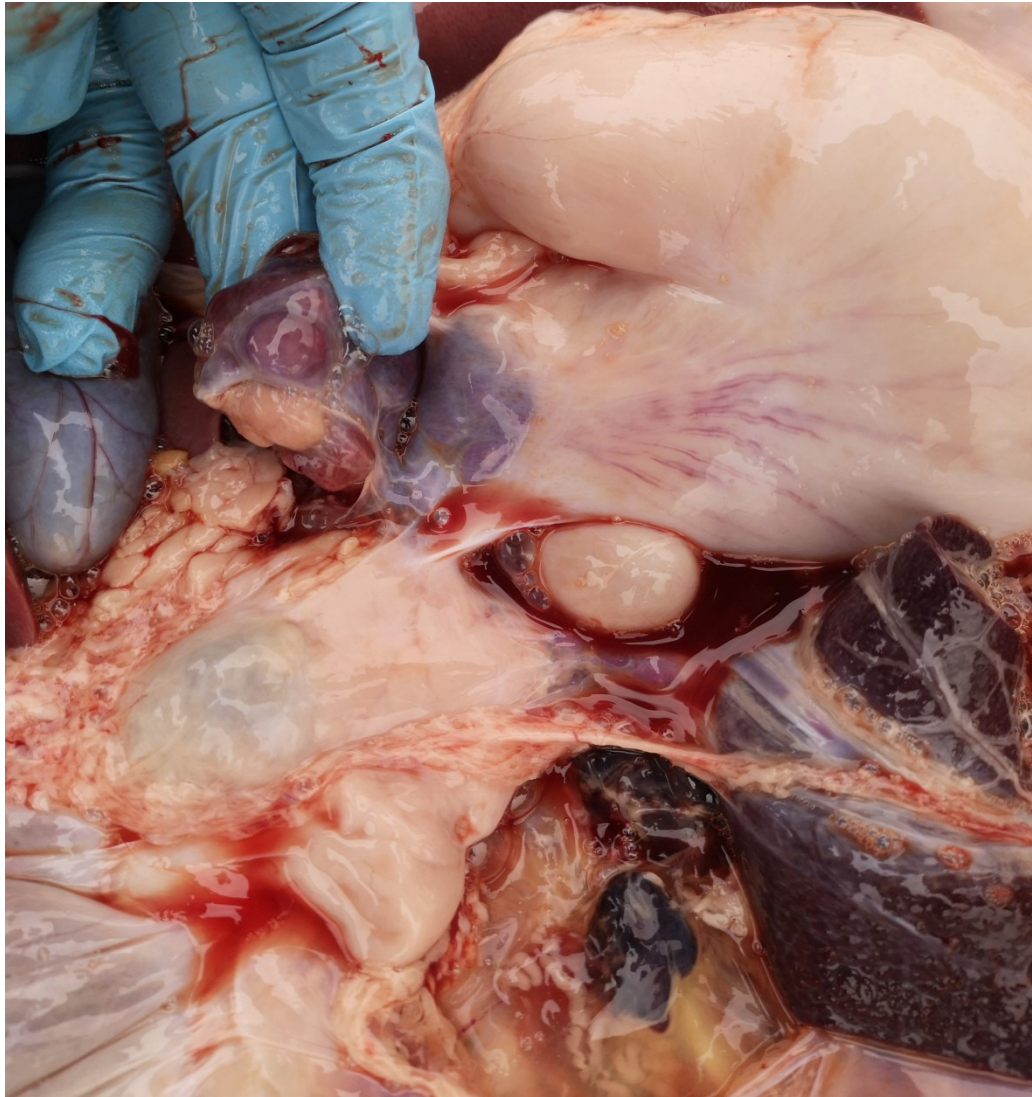
脾脏异常肿大并常有梗死。





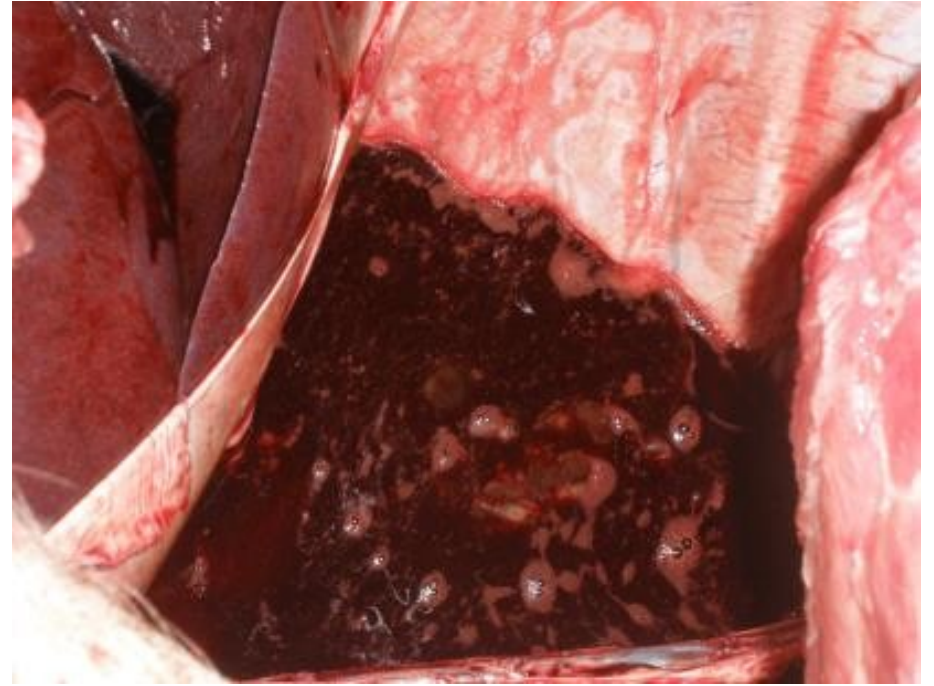
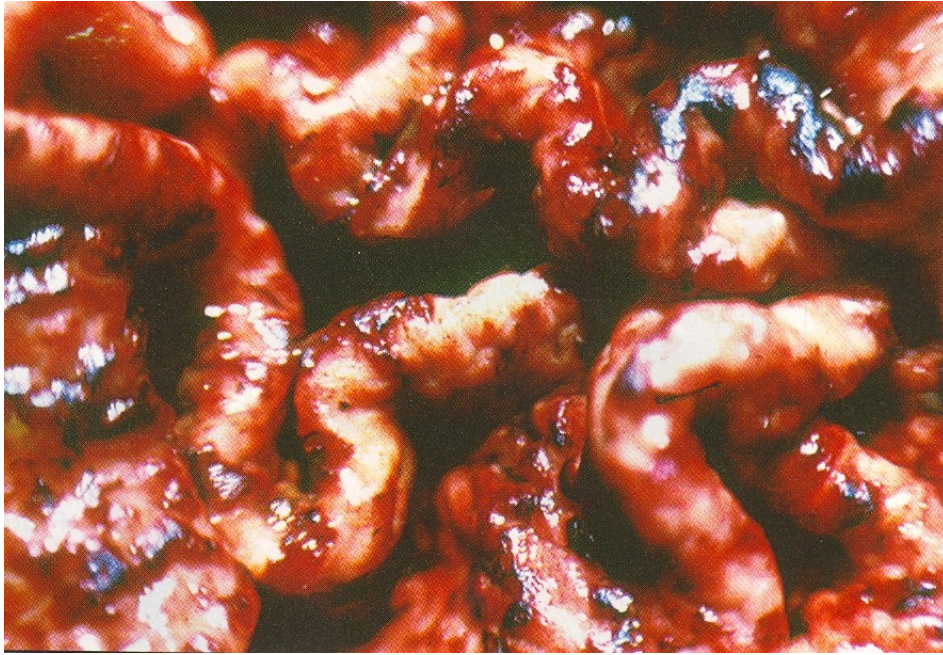


Copious serosanguinous fluid in body cavities  
体腔中大量浆液性积液



Hemorrhagic-necrotic lymphnodes.  
淋巴结出血性坏死

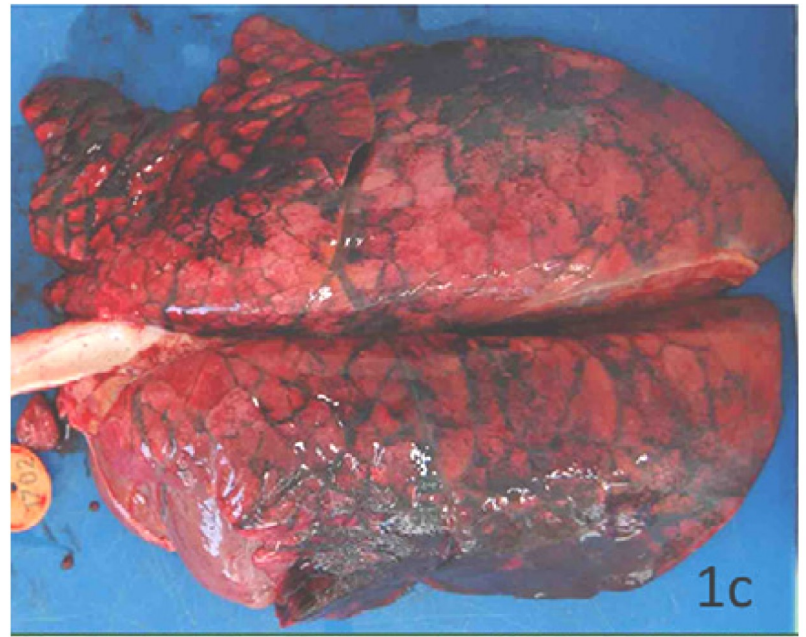




Acute forms of ASF exhibit remarkable hemorrhaging  
in thoracic and abdominal organs.

急性非洲猪瘟 - 腔和腹腔器官有显著出血。





Lungs may show a mix of preexisting PRDC lesions and acute viral pneumonia with edema, hemorrhage and interstitial change.

肺可能混有猪呼吸道综合症的组织病变和急性病毒性肺炎，伴有水肿，出血和间质性病变。





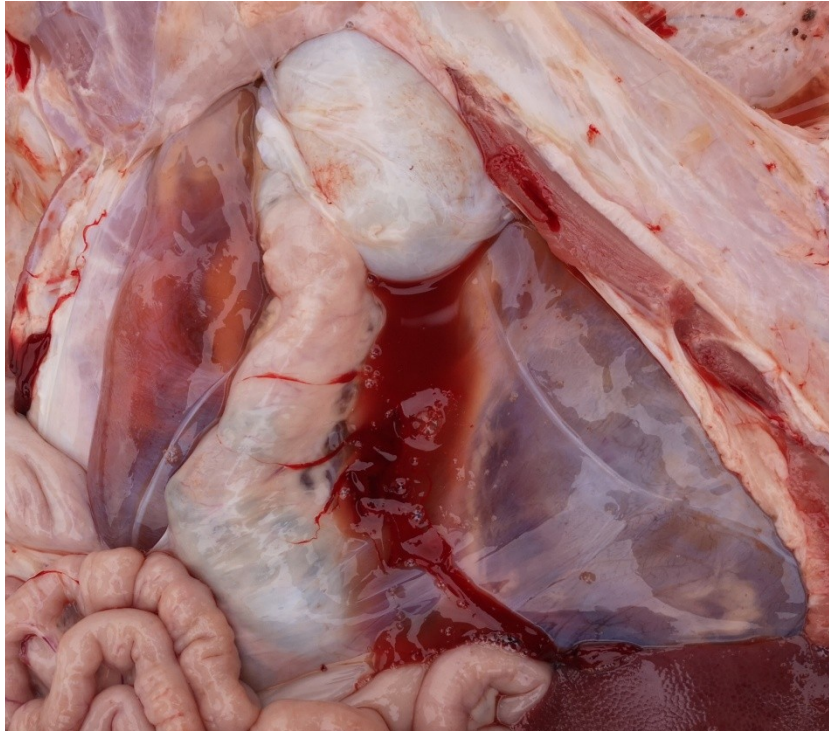
Myocarditis, pericarditis, pneumonia.  
心肌炎，心包炎，肺炎。





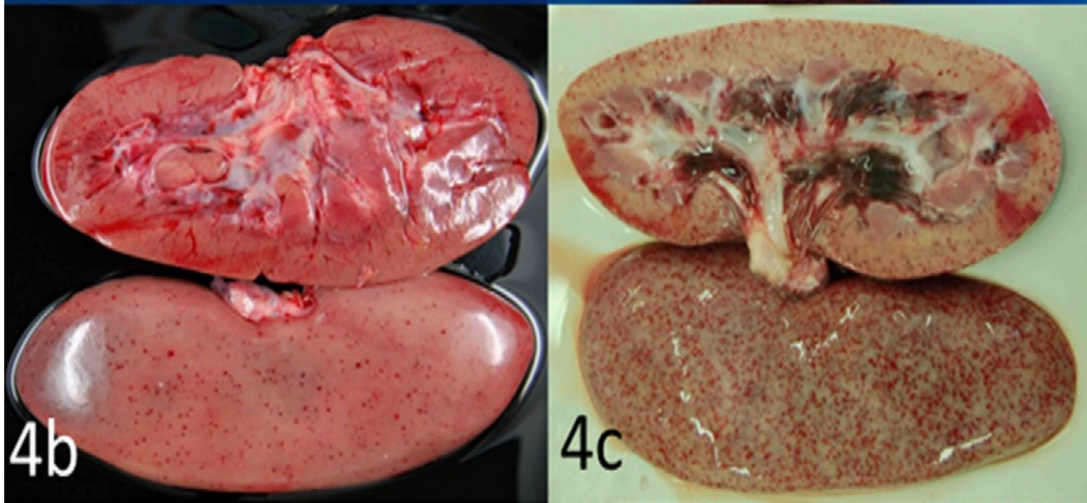
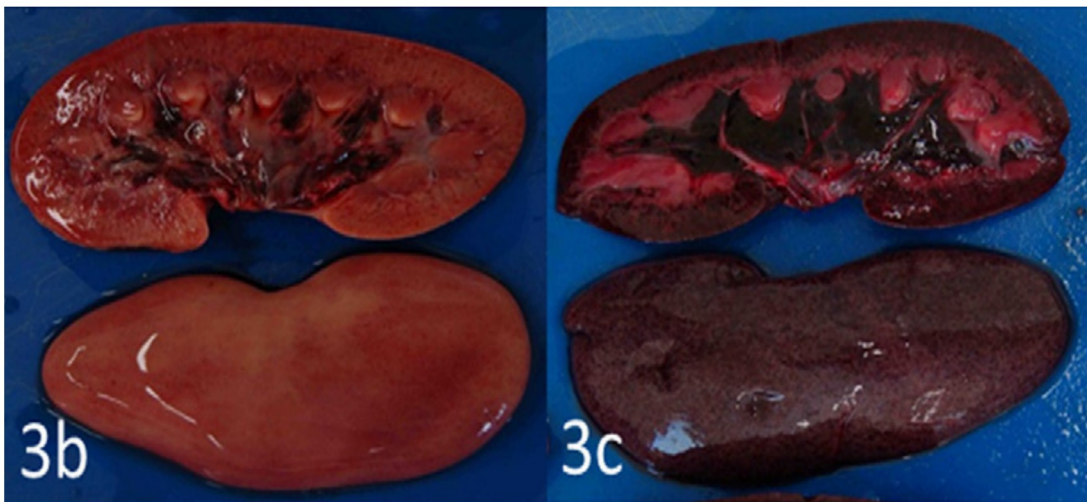
Hemorrhagic – necrotic myocarditis.  
出血坏死性心肌炎



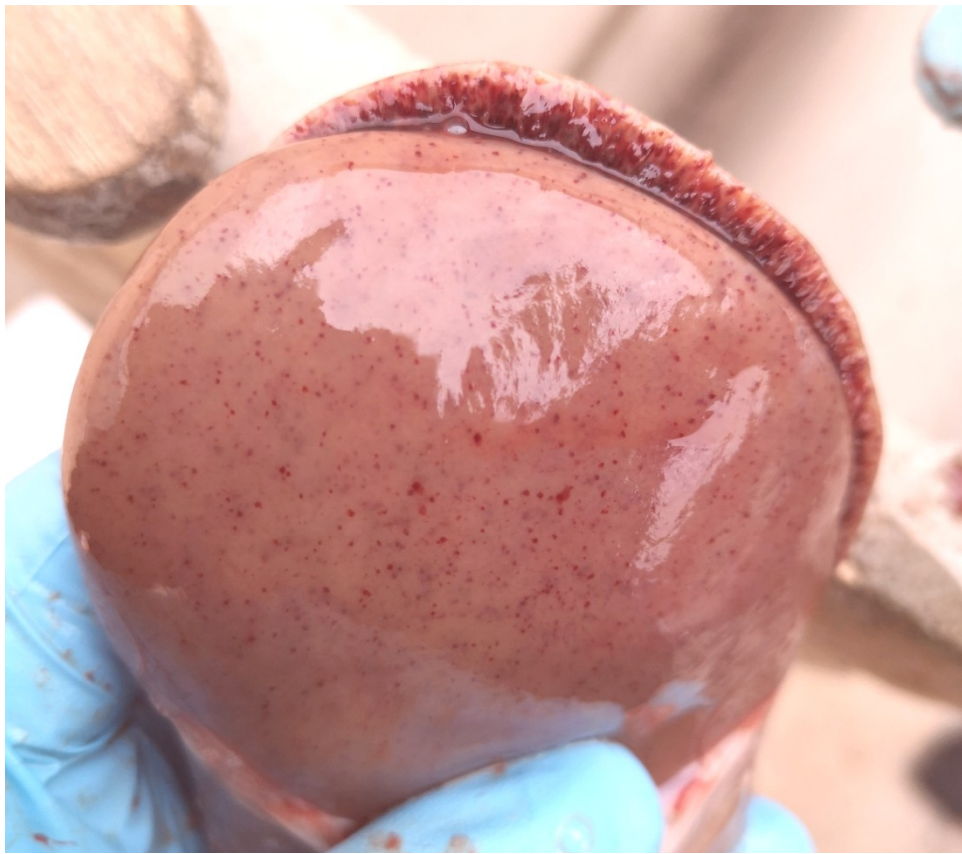


Serosanguinous perirenal edema  
肾周浆液性水肿





Kidney lesions can resemble CSF. Sometimes there are no lesions in kidney. 非洲猪瘟的肾组织损伤和典型猪瘟类似，但是比常见的典型猪瘟案例要严重很多。有时候没有病变。



ASF Kidney lesions resemble CSF, but are more severe than usually seen in CSF cases  
非洲猪瘟的肾组织损伤和典型猪瘟类似，但是比常见的典型猪瘟案例要严重很多。





Kidneys more wet and edematous than seen in most CSF cases.  
肾比大多数典型猪瘟都更湿润，水肿更严重。



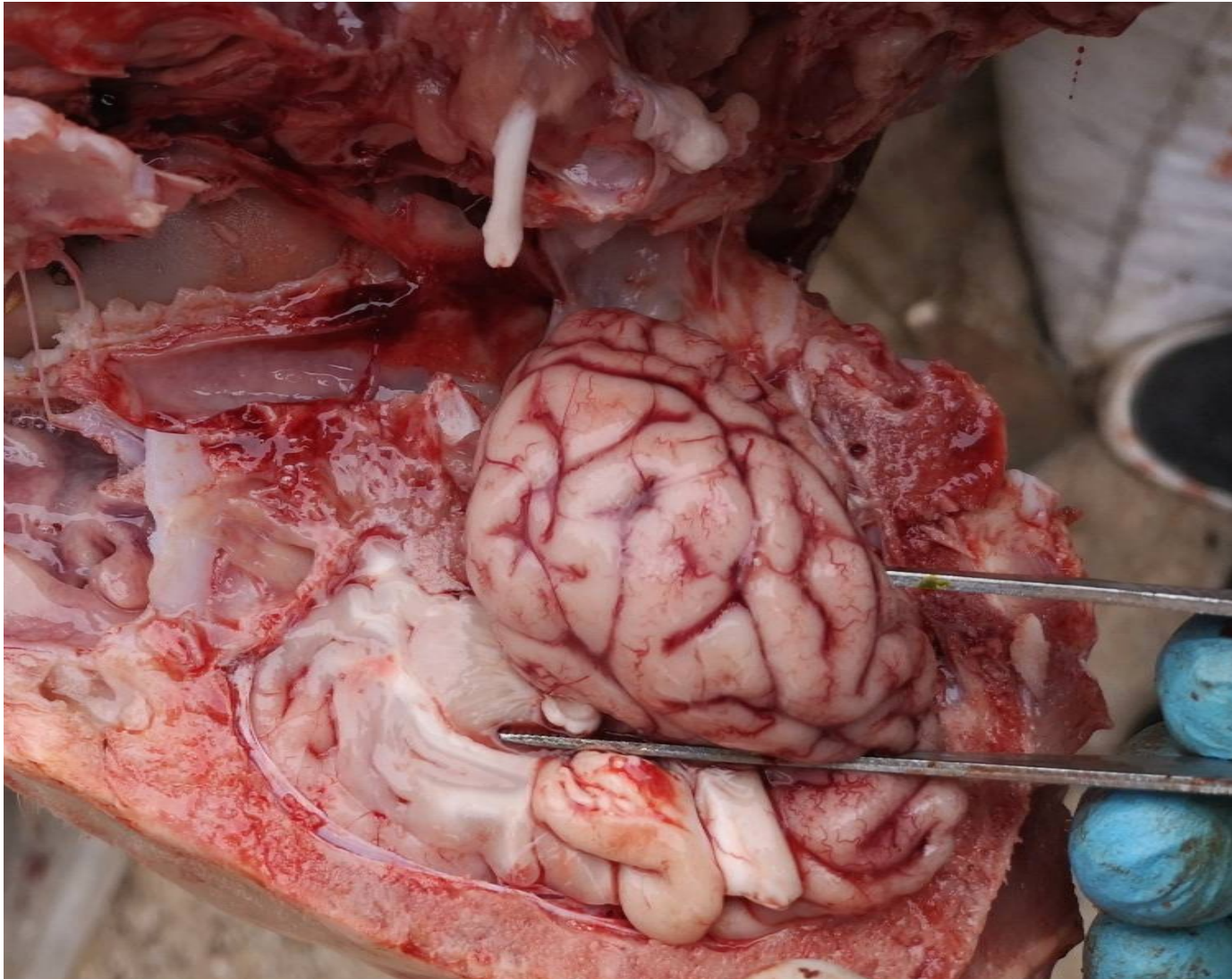


Urinary Bladder normal.

膀胱正常

Sometimes no lesions in kidneys, also.

有时，肾也没有什么损伤。



Cerebrum:

大脑

Fibrinohemorrhagic  
Meningitis

纤维性出血性  
脑膜炎

# Differential Diagnosis 鉴别诊断

- Classical Swine Fever 典型猪瘟 ( CSF )
- Pseudorabies 伪狂犬
- PRRS 蓝耳病
- Erysipelas 猪丹毒
- Salmonellosis 沙门氏菌
- Porcine Respiratory Disease Complex 各种猪呼吸道疾病
- Porcine Circovirus Associated Disease 猪圆环病毒相关疾病



# Diagnosis 诊断

PCR: blood, spleen, tonsil or lymph node  
血液，脾脏，扁桃体或淋巴

ELISA Ab testing ELISA 抗体检测

Histopathology 病理切片

Virus Isolation 病毒分离

## ASF Disinfection 消毒

ASF virus is extremely durable 非洲猪瘟病毒耐受力相当强

Resists 56°C for up to 70 minutes 56°C 可存活 70 分钟

Survives for months in feces, blood, and decomposed tissues.  
粪便，血液和腐败组织中可存活数月

Survives indefinitely in frozen meat 冻肉中可以永久存活

If protected by serum, can tolerate pH 13.4 for 7 days,  
21 hours without serum.

在血清中，pH13.4 可存活 7 天，无血清可存活 21 小时



# ASF Disinfection 消毒

- Inactivated by ether and chloroform. 乙醚和三氯甲烷可灭活
- Killed in 30 minutes by 1% NaOH, 0.3% formalin  
1% NaOH, 0.3% 福尔马林需要 30 分钟杀灭
- Potassium peroxymonosulfate (Virkon-S) is certified for all uses.  
已证实，过硫酸氢钾（卫可-S）在所有应用中均有效。
- Iodine and Chlorine products are not at all reliable for ASF control.  
碘和氯制剂在控制非洲猪瘟上一点也不可靠。

# Cleaning 清洁

It is virtually impossible to disinfect dirty surfaces

事实上，在脏的表面上做消毒是不可能有效果的。

Biofilms produced by bacteria can coat surfaces, protecting microbes with a water-resistant shellac that resists disinfection and can release pathogens over time. Alkaline cleaners can degrade and saponify biofilms. 细菌产生的生物膜会覆盖住表面，形成可以保护细菌的防水胶体，同时也就耐受住了消毒，随后会释放出病原。碱性清洁剂可以让生物膜降解和皂化。



# Cleaning 清洁

- NaOH, TSP, and similar alkaline agents are useful in cleaning but are corrosive to aluminum.

氢氧化钠，磷酸三钠，和类似的碱性物质对清洗很有帮助，但对铝有腐蚀性。

- Hot water improves speed and effectiveness of cleaning.

热水可以提高清洗的速度和效率

- Wood is very difficult to clean and its use should be avoided.

木头很难清洗干净，应该避免使用木头。

# Control of ASF 非洲猪瘟的控制

Creation of Restricted Zones 建立严控区域

Pig movement by permit only 得到允许才可活动

Mass Depopulation/Euthanasia 大量清群 / 扑杀

Destruction of all clinically affected and in-contact swine.

处死所有临床感染和接触猪只

# Acknowledgement 致谢

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