

ESCHERICHIA COLI-ASSOCIATED FIBRINOUS POLYSEROSITIS IN A RED SQUIRREL (*SCIURUS VULGARIS*).

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Introduction

Fibrinous polyserositis is commonly associated with various septicaemic bacterial infections, including *Escherichia coli* in chickens, sucking pigs, and other mammals. This presentation has not previously been reported in a rodent.

Clinical History

A 5-year-old male red squirrel (*Sciurus vulgaris*) was submitted from a UK zoological collection, for full post-mortem examination after being found dead with no prior clinical signs. Carcass was submitted approximately 24-48 hours after death.



Image sourced from: <https://www.logsdirect.co.uk/red-squirrel-donation> (06/08/2022)

Gross Pathology

- Unilateral exophthalmos (left eye), with focally extensive central corneal ulceration and fibrinosuppurative conjunctival exudate (see Figs. 1a and 1b).
- Abundant pale pink, soft, and adhesive material associated with the serosal surfaces of various thoracic and abdominal organs (fibrinous pleuritis and peritonitis; see Figs. 1c and 1d).

Microbiology

- Bacterial cultures revealed *Escherichia coli* (confirmed by MALDI-TOF) as the only common bacterial species in both cavities.
- Other infectious organisms included *Listeria monocytogenes*, *Proteus* spp. and *Enterococcus* spp.

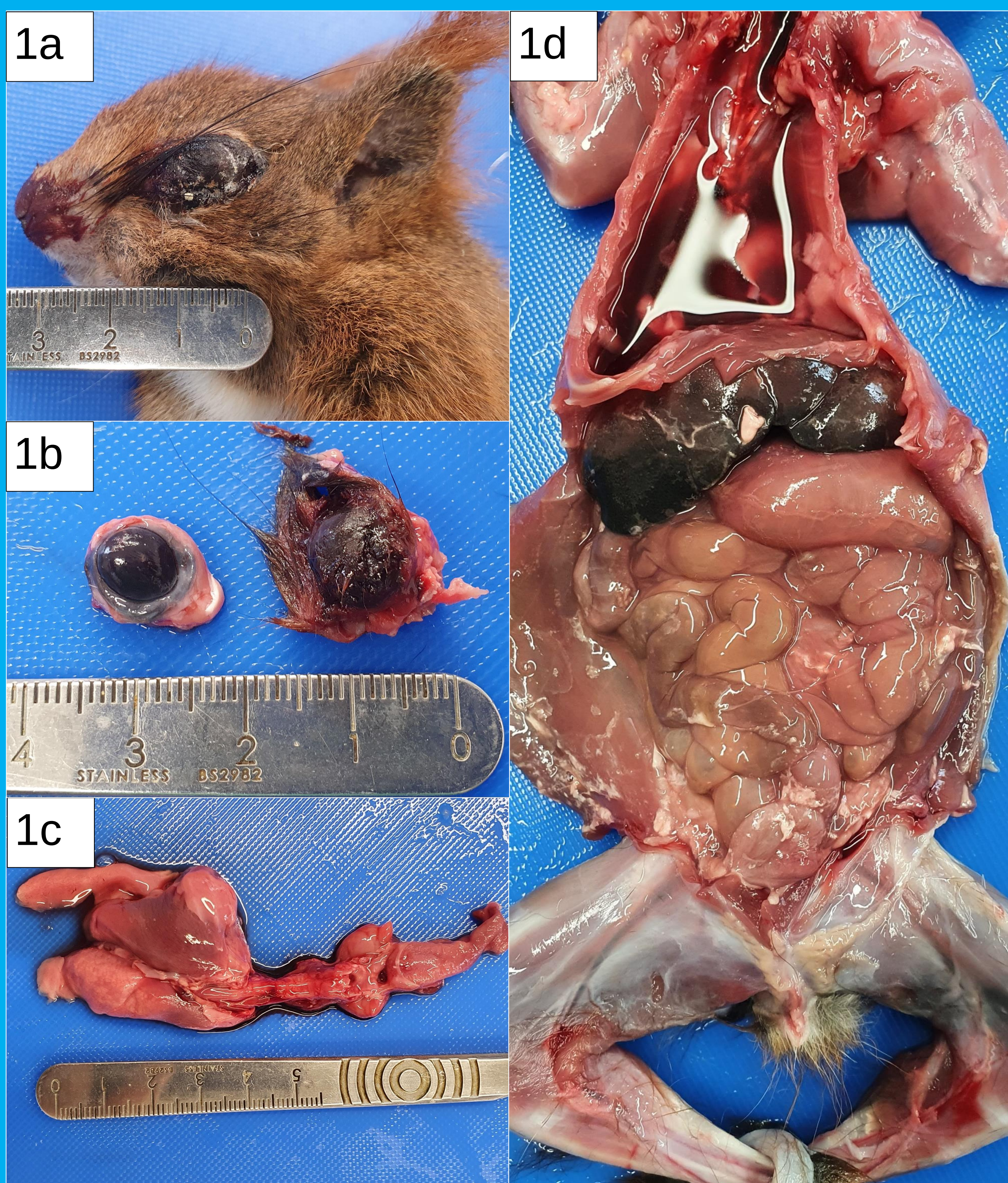


Fig 1: Gross images. 1a/1b) Left eye: Unilateral exophthalmos, with corneal ulceration and conjunctival exudate. 1c) Cardiorespiratory tract: fibrinous pleuritis and pericarditis. 1d) Abdominal cavity: fibrinous peritonitis.

Histopathology

- Body cavities:** Severe acute diffuse fibrinous pleuritis (see Fig 2a/2b), pericarditis and peritonitis, with intralesional and intravascular Gram-negative bacterial emboli (liver, lung, left eye; see Fig 2a insert and 2d).
- GI tract:** ulcerative enterocolitis with Gram-negative rod-like bacteria.
- Left eye:** exhibited severe necrohaemorrhagic and suppurative retrobulbar cellulitis, resulting in exophthalmos and secondary severe ulcerative keratitis, episcleritis and conjunctivitis, plus necrosuppurative-haemorrhagic panophthalmitis with intralesional fungal hyphae and coccoid bacteria (most likely either *Staphylococcus* or *Streptococcus* spp.).
- Right eye:** exhibited a cataract, only.
- No viral inclusion bodies (indicative of e.g., Squirrel adenovirus 1) were identified in any organ.

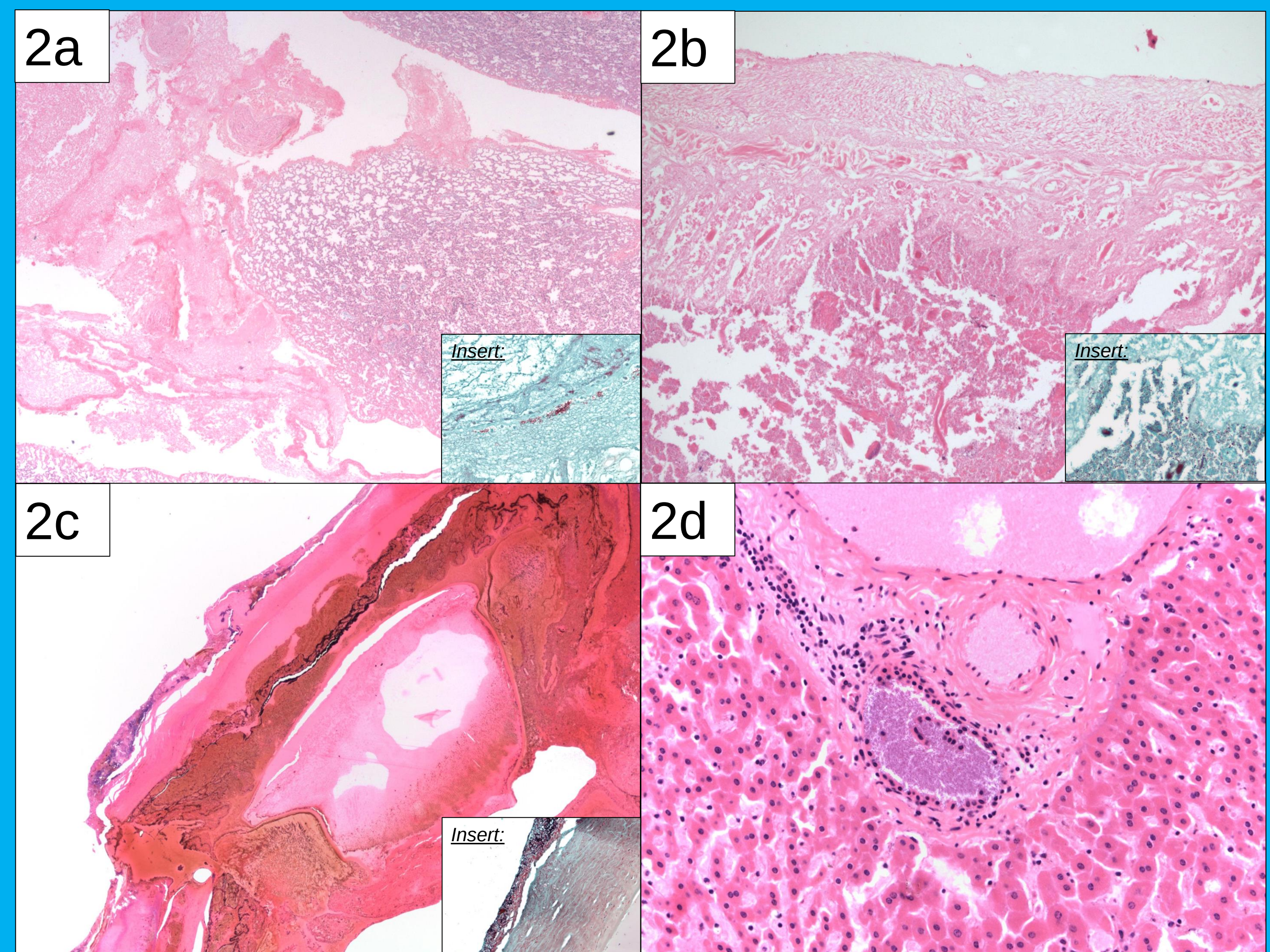


Fig 2: Histopathology. 2a) Lung: fibrinous pleuritis (HE, 20x), insert - intralesional gram-negative rod-like bacteria (Gram, 400x). 2b) Small intestine: ulcerative enteritis (HE, 100x), insert - intralesional gram-negative rod-like bacteria (Gram, 400x). 2c) Left eye: Severe necrohaemorrhagic retrobulbar cellulitis, panophthalmitis and ulcerative keratitis-episcleritis-conjunctivitis (HE, 20x), insert - intracorneal fungal hyphae and gram-positive cocci (Gram, 400x). 2d) Liver: intravascular embolus of rod-like bacteria HE, 200x)

Conclusions

These findings confirm the first report of *Escherichia coli*-associated fibrinous polyserositis in a red squirrel (*Sciurus vulgaris*). The source of the infection could not be confirmed as this was a captive free-living individual; however, such cases may represent potential sources of rodent-borne *Escherichia coli* infections in zoological collections.