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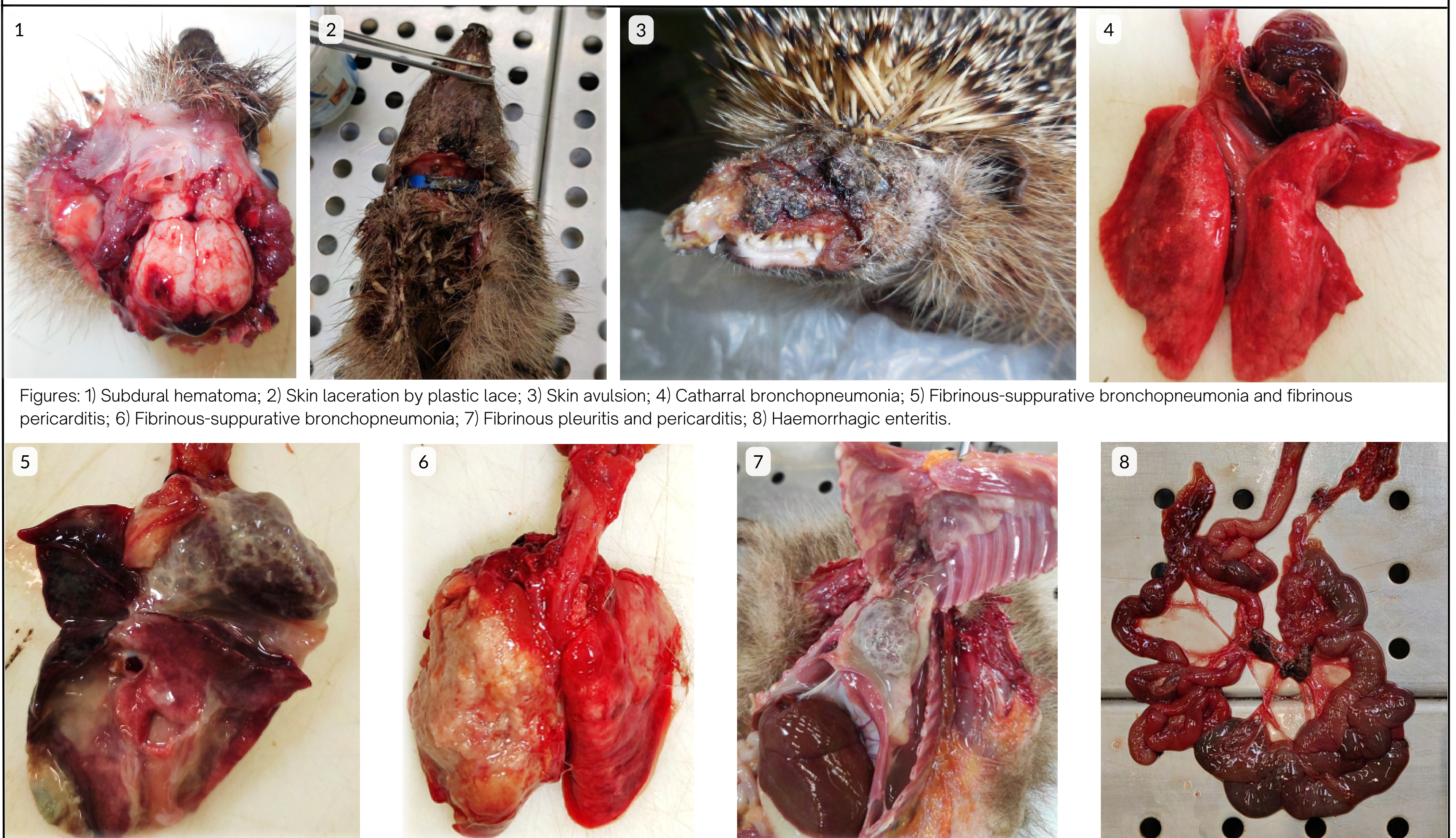
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## INTRODUCTION

The European hedgehog is a small insectivorous mammal whose populations show a consistent decline across different European countries. Human activities (e.g., landscape modifications, pesticide use, road traffic) are some of the main drivers of this phenomenon<sup>1</sup>. However, so far few studies provided solid data on the pathological processes underlying hedgehog mortality. The aim of this study was to analyse gross and histopathological lesions and determine the main causes of mortality of European hedgehogs in Italy and Switzerland.

## MATERIALS AND METHODS

Deceased/ethanised hedgehogs were necropsied at the Department of Veterinary Sciences of Turin University and at the Institute of Veterinary Pathology of Vetsuisse Zurich (years 2012-2022) and samples of the main organs were routinely processed for histological examination.



Figures: 1) Subdural hematoma; 2) Skin laceration by plastic lace; 3) Skin avulsion; 4) Catharral bronchopneumonia; 5) Fibrinous-suppurative bronchopneumonia and fibrinous pericarditis; 6) Fibrinous-suppurative bronchopneumonia; 7) Fibrinous pleuritis and pericarditis; 8) Haemorrhagic enteritis.

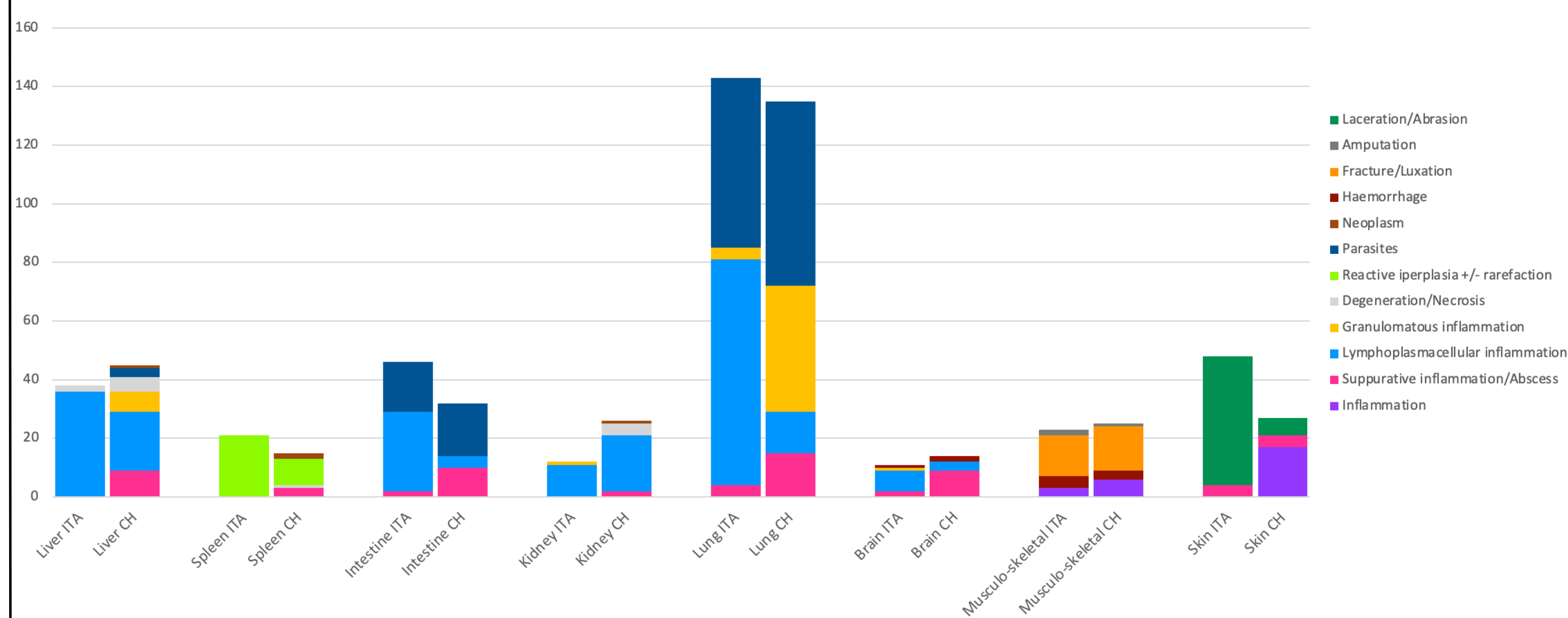


Table 1: Main pathologic findings identified in the main organs in Italy and Switzerland

## RESULTS

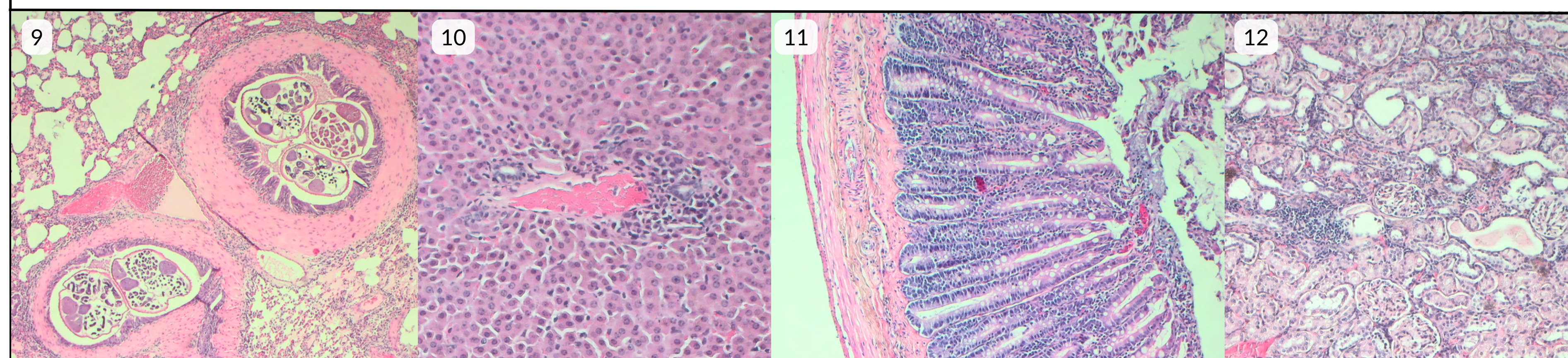
A total of 265 hedgehogs were analysed (156 in Italy, 109 in Switzerland). Of them, adults were 55.9% and juveniles 44.1%, 51.7% were males and 41.5% females (6.4% were not available).

### Main pathologic findings:

- **Traumata:** bone fractures/amputations, skin lacerations and brain haemorrhages
- **Lungs:** lymphoplasmacytic (39.4%), granulomatous (20.3%) or suppurative pneumonia (8.2%); considering all forms, concurrent evidence of lungworms was seen in 121 cases (77.1%)
- **Liver:** lymphoplasmacytic hepatitis (24.6%)
- **Kidney:** lymphoplasmacytic nephritis (12.8%)
- **Intestine:** lymphoplasmacytic enteritis (12.4%)

### Causes of death:

- **Switzerland:** infections (70.6%; 39.0% of these led to septic processes), traumata (11.9%)
- **Italy:** traumata (46.8%), infections (44.9%)



Figures: 9) Lung: lymphoplasmacytic bronchopneumonia with nematode slices in bronchial lumina; 10) Liver: periportal lymphoplasmacytic infiltration; 11) Duodenum: lymphoplasmacytic enteritis; 12) Kidney: lymphoplasmacytic interstitial nephritis.

## CONCLUSIONS

In contrast to previous studies<sup>2-3</sup>, which report trauma as the main cause of hedgehog mortality, our results highlight the primary role of infections. These findings underline the importance of pathogen monitoring in hedgehogs while considering their interaction with humans and other animal species.

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