

SUSCEPTIBILITY OF FINNISH RAINBOW TROUT TO THREE DIFFERENT GENOGROUPS OF IPNV: AN INFECTION TRIAL

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INTRODUCTION

IPNV (infectious pancreatic necrosis virus) is a highly prevalent virus in Finnish fish farms. Several genotypes exist in Finland and nearby waters, but their clinical symptoms and pathogenicity are inadequately known, hampering their management. Three genogroups of IPN virus, 2, 5 and 6, have been isolated in Finland, of which genogroups 2 and 5 are encountered annually. Genogroup 2 is the most widely spread geographically and has been the only genogroup associated with clinical disease in field observations. According to previous studies, all three genogroups demonstrate amino acid patterns previously associated with avirulence in genogroup 5 viruses.

MATERIAL AND METHODS

To find out more about the pathogenicity of the different IPNV genogroups on Finnish rainbow trout (*Oncorhynchus mykiss*) strain, an infection trial was performed at VESO Vikan, Norway. Rainbow trout fry originating from Finnish IPNV test-negative parental fish were challenged by a bath model at start feeding. Three Finnish IPNV strains (genogroups 2, 5 and 6), one Norwegian strain (positive control, genogroup 5) and a negative control (cell culture medium) were used in triplicate tanks, except for genogroup 2 where fish in 9 tanks were challenged. Mortalities were recorded daily for eight weeks

RESULTS

Cumulative mortalities for all treatment groups are shown in Fig 1. Highest cumulative mortalities were noted for the Finnish genogroup 5 (38.2-10.3 %). For Finnish genogroup 2, variation in mortalities between different groups was high (28.3-3.5%). Finnish genogroup 6 caused only few mortalities (8-2.6%), whereas negative control treatment (3.4-1.7%) and positive control genotype 5 (Norwegian strain) treatment (3.7-1.7 %) showed only minimal mortalities.

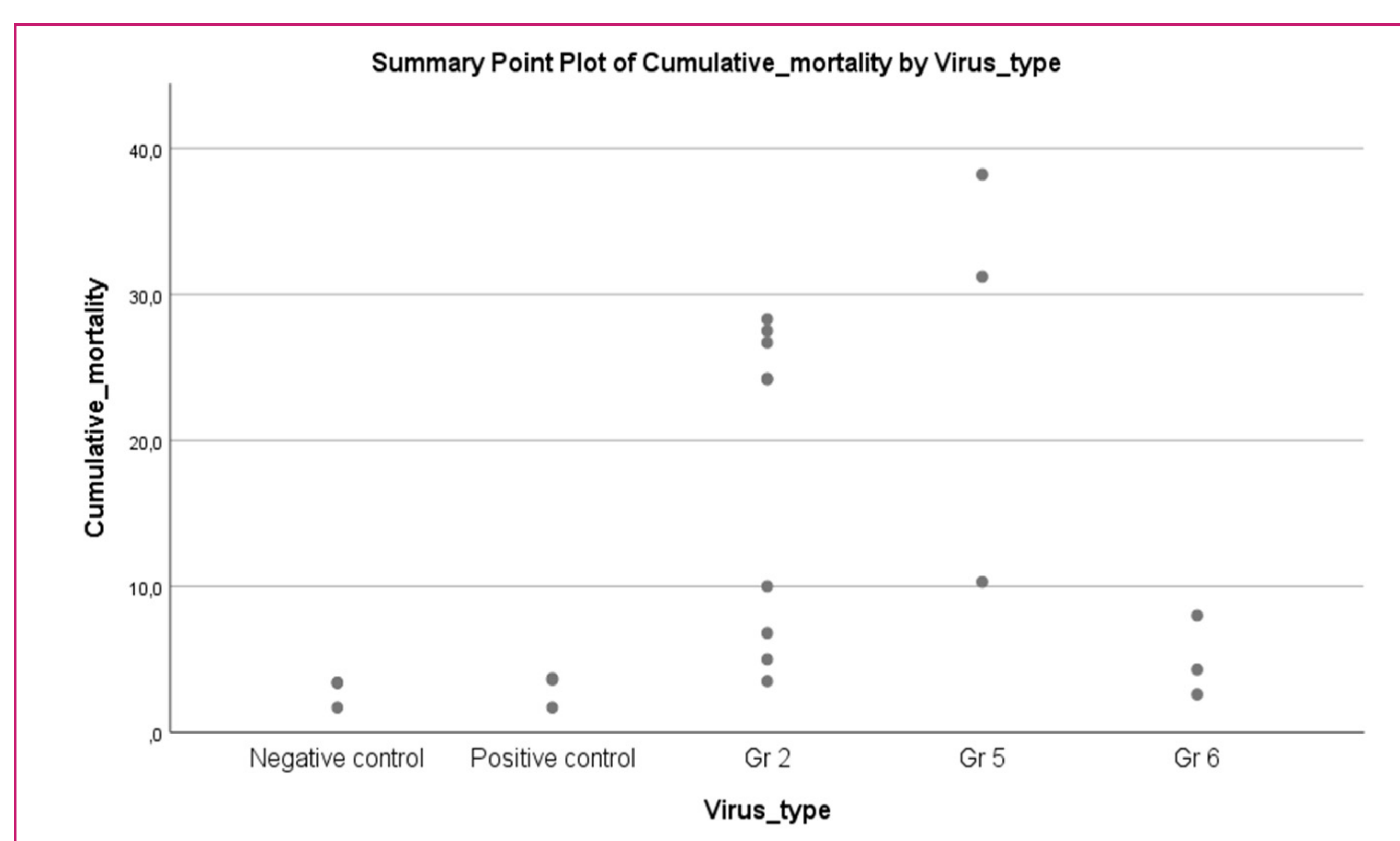


Figure 1. Cumulative mortalities in all treatment groups.

Histopathological changes typical of IPN infection was noted in pancreas and pylorus for genogroup 2 at weeks 6 and 8, and the Finnish genogroup 5 treatment at week 6. (Figure 2 and 4). These changes consisted of varying

degrees of necrosis of acinar cells in the pancreas, nests of necrotic cells in the mucosa of pylorus and eosinophilic casts in the pyloric cecal lumen. These samples also showed an immunohistochemically positive reaction for IPNV (Figure 3). In other treatments, histopathological changes incl. immunohistochemistry were not present.

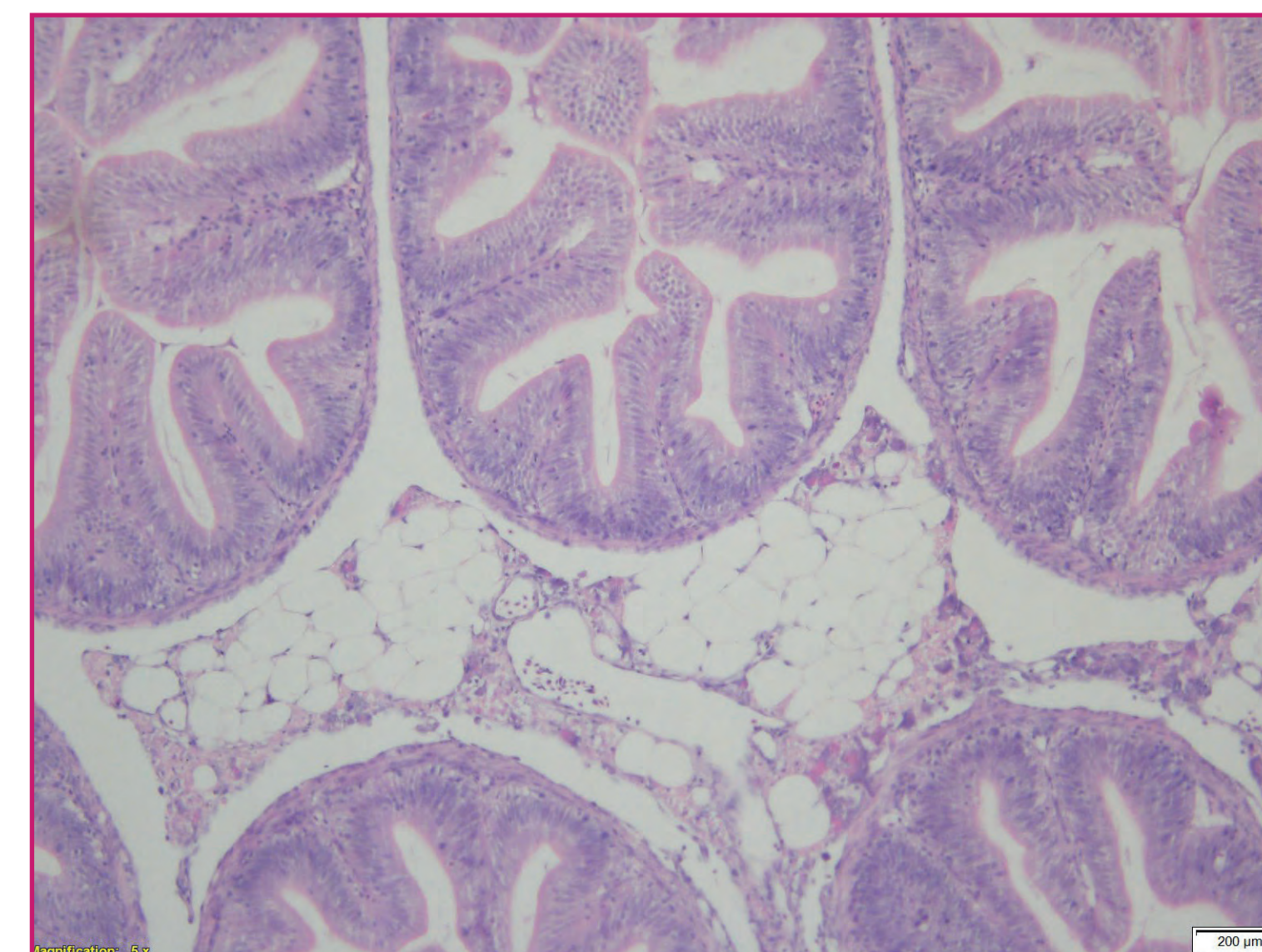


Figure 2. Moderate-severe acinar cell necrosis of pancreas (genogroup 2 treatment, H&E staining).

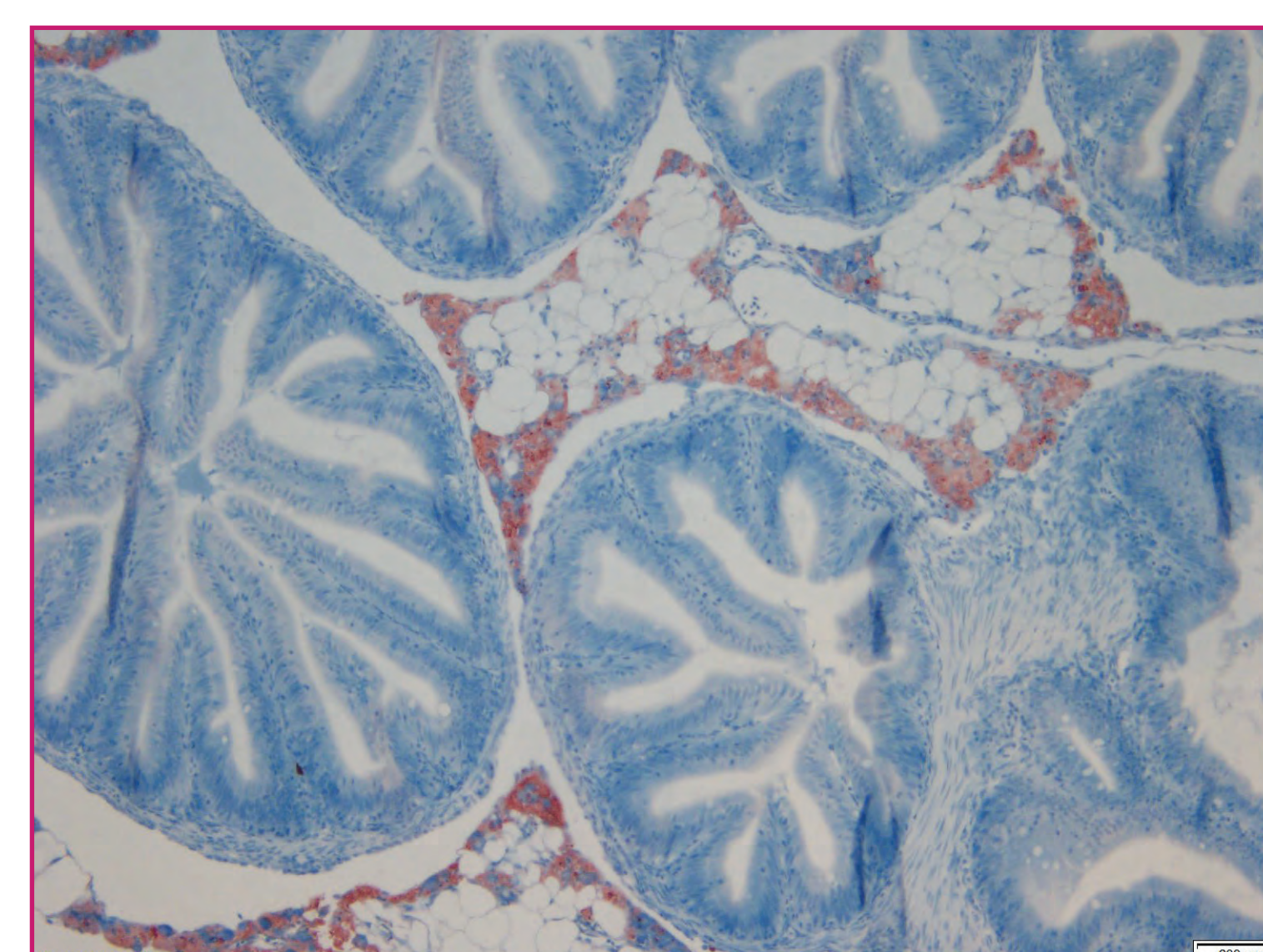


Figure 3. IHC positive staining (bright red) in pancreas tissue (genogroup 2 treatment).

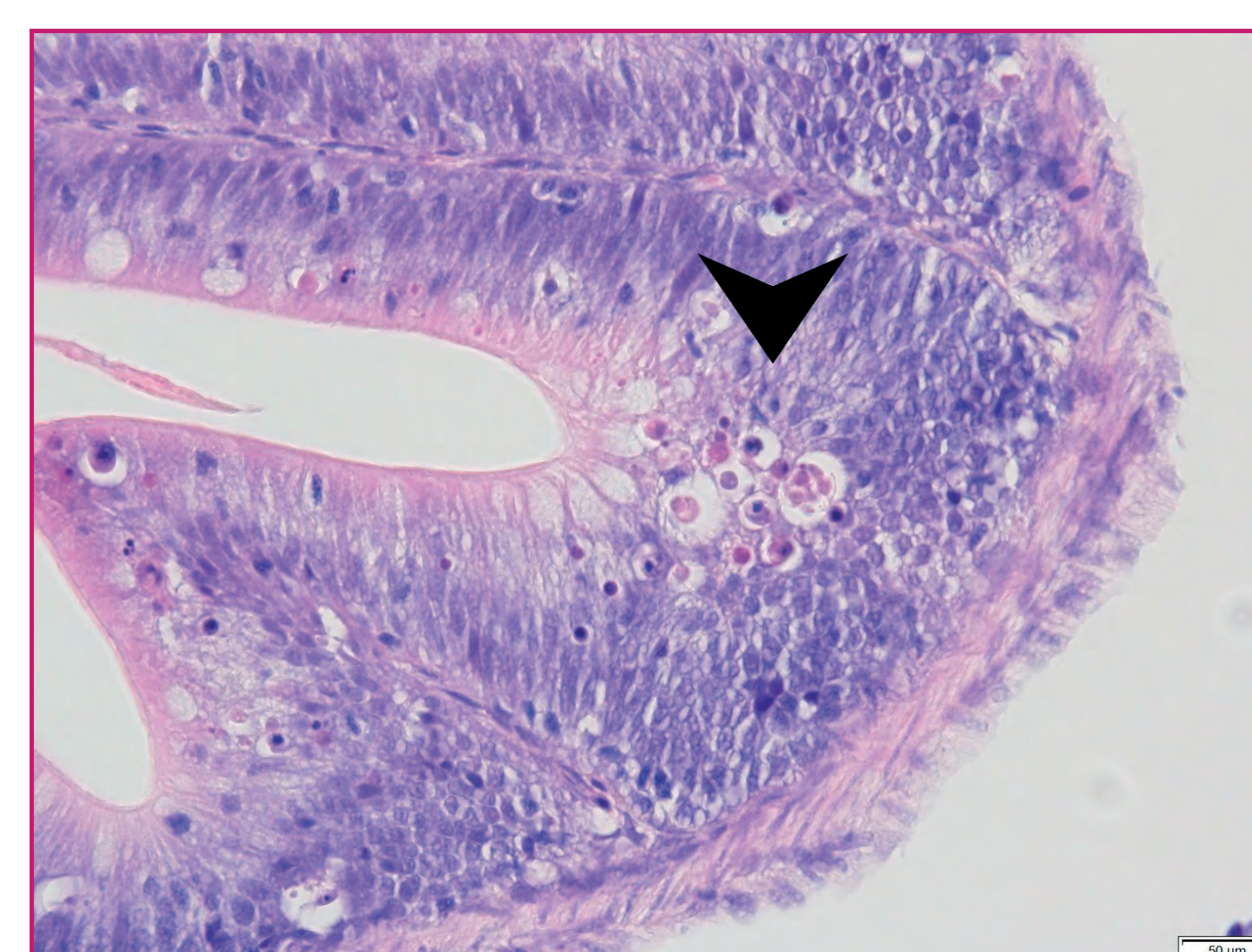


Figure 4. Nests of necrotic cells in pyloric mucosa, black arrowhead (genogroup 2 treatment, H&E staining).

Viral RNA was detected by PCR at week 6 from fish challenged with genogroups 2 and 5 and the positive control. At week 8, fish from genogroups 2 and 5 showed PCR positive results. No PCR positive fish were found in fish challenged with genogroup 6 or negative control.

SUMMARY

Based on the results, Finnish Rainbow trout appears to be susceptible to the Finnish genogroup 2 and 5 viruses. In this experiment, the genogroup 6 and the positive control (Norwegian IPNV strain) did not cause clinical IPN nor significant mortalities. However, the genogroup 6 virus was not detected by PCR from the challenged fish and the success of viral entry remained unverified for genogroup 6.