DIAGNOSIS OF PORCINE CYTOMEGALOVIRUS
BY QPCR COMPARED TO HISTOPATHOLOGY

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CONCLUSION

qPCR on nasal swap samples can be used as a diagnostic tool for diagnosing PCVM in piglets with a cut-off for the PCR test between 5.83log10 and 7.16log10.

Background

Porcine cytomegalovirus (PCMV) inhabit the nasal cavity of pigs and can cause rhinitis. Detection of inclusion bodies by histopathology has been the gold standard when diagnosing PCMV (Figure 1). As PCMV are present in the nasal fluid of a high proportion of healthy pigs, detection of the virus by conventional PCR is inconclusive. The hypothesis is that the amount of PMCV in the nasal secretions are higher in pigs with inclusion bodies compared to healthy pigs.

Objective

The objective was to compare quantitative results of qPCR on nasal swabs with histopathological examinations.

Materials and Methods

Nasal swabs and nasal mucosa from piglets with signs of upper respiratory disease were tested by real-time qPCR and histopathology. The qPCR results were reported on a continuous log10 scale, and the histopathology was reported on a qualitative scale, declaring no pathological signs of PCMV, inconclusive signs or definite signs of PCMV. Results were compared by ROC curves with area under the curve (AUC), stating the overall test validity. The optimal cut-off value for the PCR test was established using plots of sensitivity (Se) and specificity (Sp) at different qPCR cut-off values. The cut-off values only relate to the particular assay used in this study.
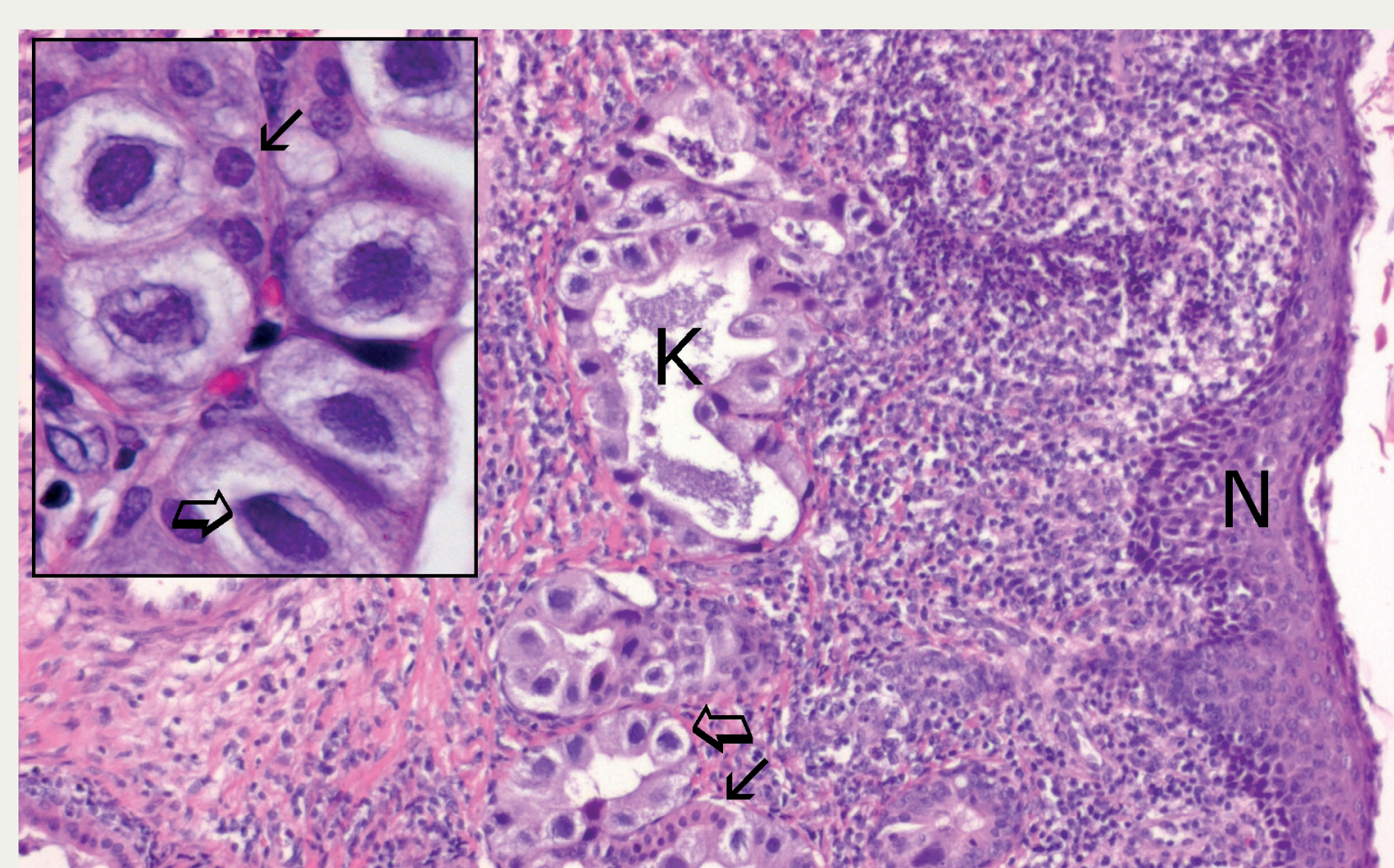
Source: National Veterinary Institute

FIGURE 1 Histopathologic image of Porcine cytomegalovirus inclusion bodies in the cells (broad arrows) of the nasal mucosa (N). Normal cells is marked by thin arrows. K marks glandular tissue.

Results

In total, 46 piglets were examined. The prevalence of piglets with inconclusive or definite signs of PCMV was 65%, whereas 41% of the piglets had definite histopathological signs. When including both the suspected and definite pathological signs, the ROC curve AUC were 0.83, Se=0.70, Sp=0.89 and the optimal cut-off of 5.83log10 (Figure 2). The ROC curve including only definite histopathological signs of PCMV, showed an AUC=0.96, Se=0.89, Sp=0.96 and an optimal cut-off of 7.16log10 (Figure 3).
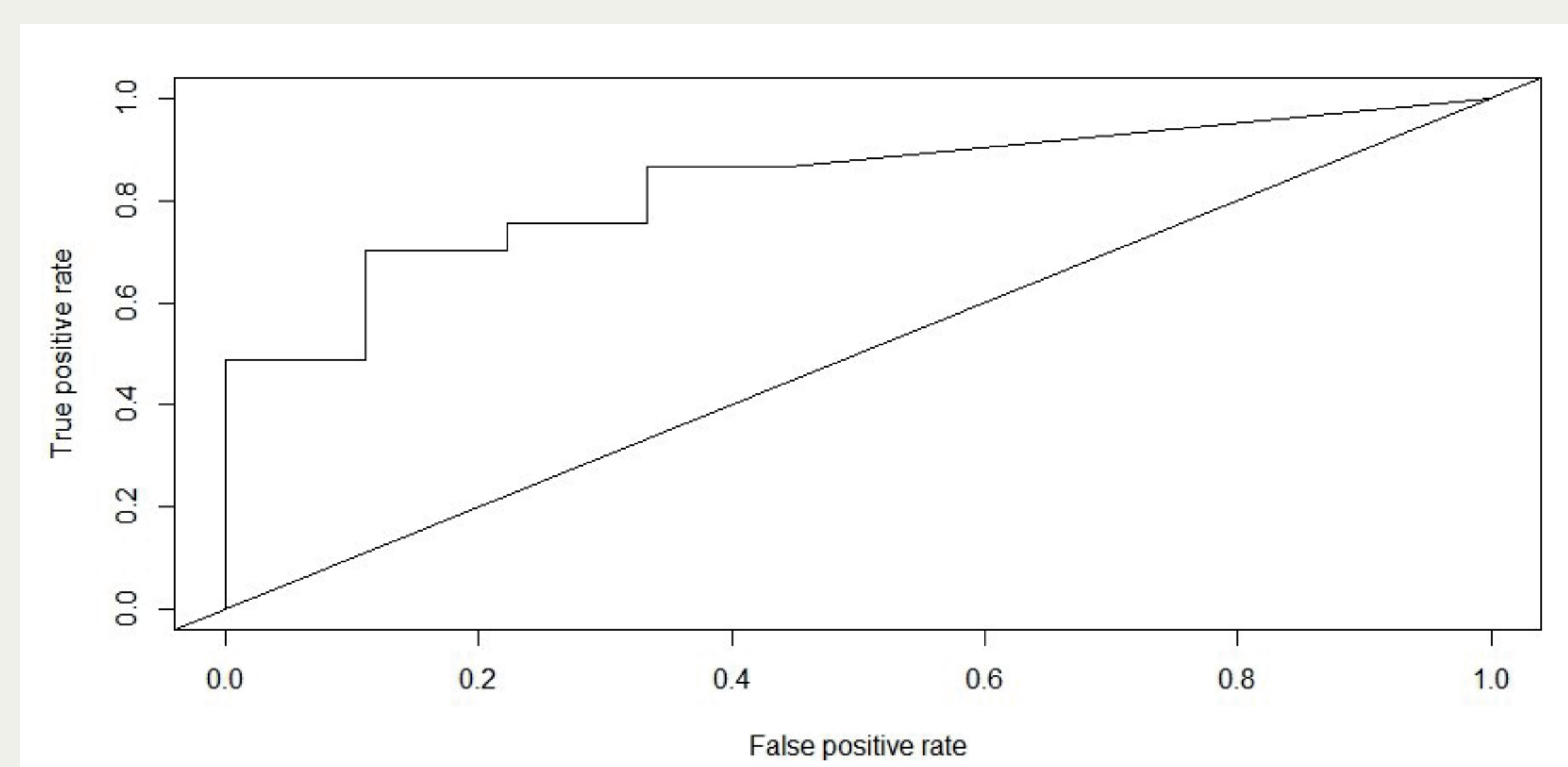

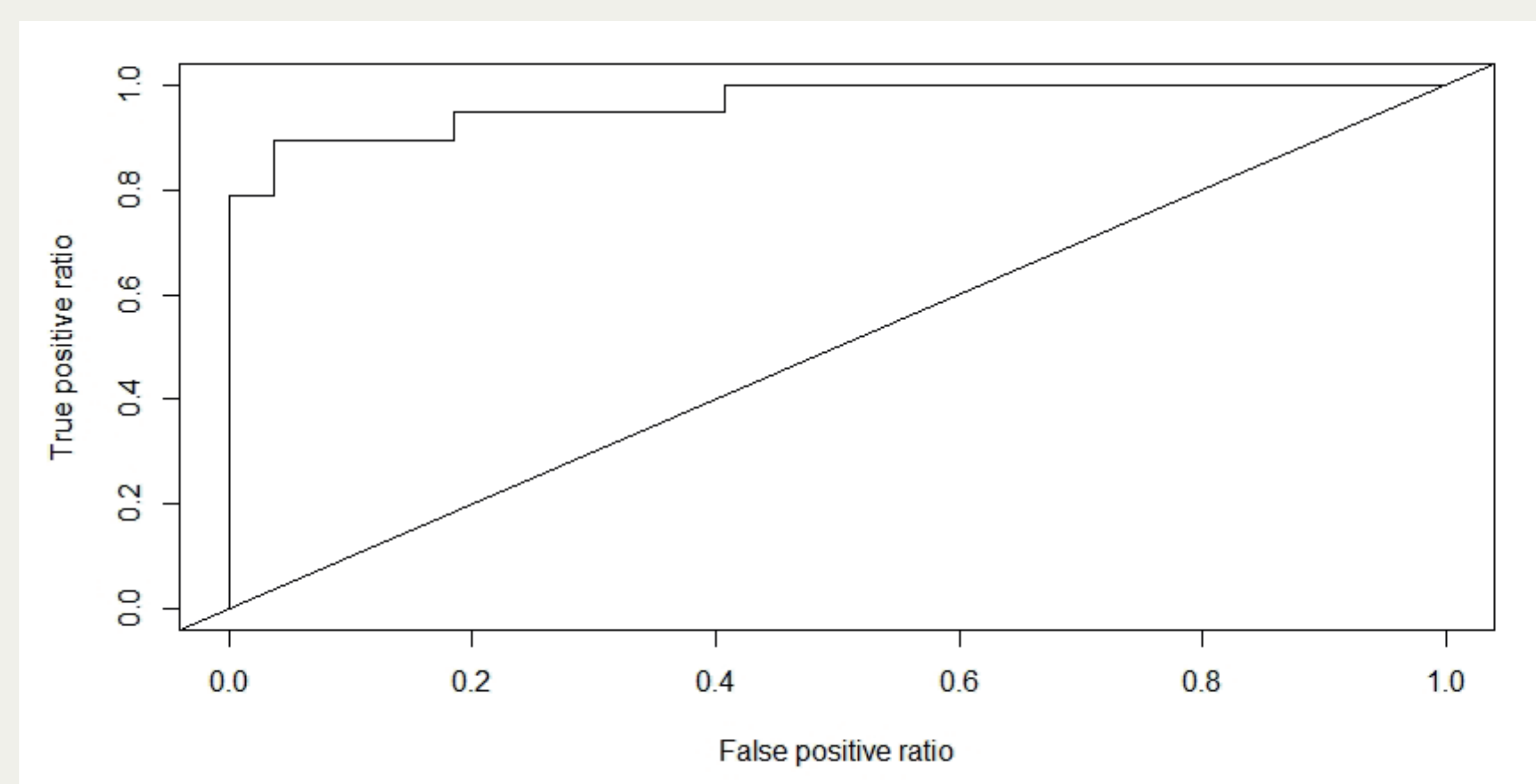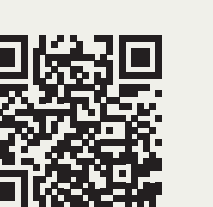**FIGURE 2** ROC curve for both suspected and definite pathological signs of PCMV compared to histopathology

FIGURE 3 ROC curve for definite pathological signs of PCMV compared to histopathology

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