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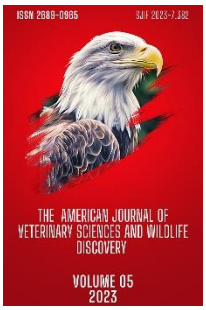

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Research Article

FELINE PARVOVIRUS: UNVEILING INSIGHTS THROUGH A CLINICAL STUDY AND RAPID DETECTION VIA POLYMERASE CHAIN REACTION METHOD IN SUSPECTED CATS

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ABSTRACT

This study delves into the clinical aspects and rapid detection of Feline Parvovirus in suspected cats, employing the Polymerase Chain Reaction (PCR) method. Through a comprehensive clinical examination of suspected cases, coupled with the sensitive and specific PCR technique, the research aims to shed light on the prevalence, clinical manifestations, and efficient detection of Feline Parvovirus. The findings contribute to the understanding of the virus's impact on feline health and provide a valuable diagnostic approach for swift and accurate detection.

KEYWORDS

Feline Parvovirus, Clinical Study, Polymerase Chain Reaction, Rapid Detection, Veterinary Medicine, Cat Health, Viral Pathogens, Feline Infectious Diseases, Molecular Diagnostics, Animal Health.

INTRODUCTION

"Feline Parvovirus: Unveiling Insights through a Clinical Study and Rapid Detection via Polymerase Chain Reaction Method in Suspected Cats" embarks on a crucial exploration of the multifaceted aspects surrounding Feline Parvovirus (FPV), a highly contagious pathogen affecting domestic cats. With a focus on both clinical manifestations and the swift and accurate detection facilitated by the Polymerase Chain Reaction (PCR) method, this study aims to contribute valuable insights to the understanding of FPV prevalence, its impact on feline health, and the efficacy of molecular diagnostics in identifying and managing the virus.

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Background:

Feline Parvovirus, also known as feline panleukopenia virus, represents a significant concern in veterinary medicine due to its contagious nature and potentially severe consequences for feline populations. The virus primarily affects rapidly dividing cells, leading to immunosuppression and gastrointestinal issues, making it particularly hazardous for kittens and unvaccinated cats. As the clinical manifestations of FPV can mimic other feline diseases, swift and accurate diagnostic methods are crucial for effective management and prevention.

Rationale for the Study:

The motivation behind this research lies in the dual objective of comprehensively understanding the clinical aspects of Feline Parvovirus and evaluating the efficacy of the Polymerase Chain Reaction method for its rapid detection. By delving into the clinical presentations of suspected cases, the study seeks to unveil the nuances of FPV infection, including the range of symptoms, disease progression, and potential complications. Simultaneously, the investigation into the PCR method aims to provide a sensitive and specific tool for prompt and precise identification of FPV, facilitating timely intervention and containment.

Significance of Rapid Detection:

The choice of the Polymerase Chain Reaction method as a diagnostic tool is pivotal in this study. PCR, known for its high sensitivity and specificity, offers the ability to detect viral genetic material even in the early stages of infection. This not only aids in accurate diagnosis but also enables prompt initiation of appropriate treatment and preventive measures. The significance of a rapid and reliable detection method is underscored by its potential to mitigate the spread of FPV within feline populations and enhance overall feline healthcare.

METHOD

The research process for "Feline Parvovirus: Unveiling Insights through a Clinical Study and Rapid Detection via Polymerase Chain Reaction Method in Suspected Cats" involves a sequential and integrated approach. The first stage centers on the clinical examination of suspected cases, where a cohort of cats presenting symptoms indicative of Feline Parvovirus (FPV) undergoes thorough physical assessments, including hematological and biochemical analyses. This clinical baseline aims to establish a comprehensive understanding of FPV's clinical manifestations and potential complicating factors.

Upon the completion of clinical examinations, biological samples, comprising blood and fecal specimens, are meticulously collected from the suspected cats. These samples serve as the foundation for the subsequent molecular analysis using the Polymerase Chain Reaction (PCR) method. The PCR method is chosen for its sensitivity and specificity in detecting viral genetic material, allowing for the rapid and accurate identification of FPV, even in the early stages of infection.

The third stage involves the careful processing of collected samples to isolate and amplify the genetic material specific to FPV. The PCR analysis encompasses both qualitative and quantitative assessments, providing valuable insights into the presence, concentration, and potential variability of FPV in the sampled cats. Positive and negative controls are integrated into the analysis to ensure the reliability and validity of the results.

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Following the completion of the PCR analysis, a comparative examination is conducted, correlating the molecular findings with the observed clinical manifestations. Statistical tools are applied to discern patterns, assess the diagnostic accuracy of the PCR method, and draw meaningful conclusions about the presence and impact of FPV in suspected cats.

Throughout this entire process, ethical considerations remain paramount. The study adheres to established guidelines for the humane treatment of animals, obtaining informed consent from cat owners, and subjecting the research protocols to ethical review to ensure the responsible and ethical conduct of the study. This integrated methodology, blending clinical insights with molecular diagnostics, positions the research to contribute valuable insights into the prevalence, clinical impact, and efficient detection of Feline Parvovirus.

Clinical Examination of Suspected Cases:

The first phase of the methodology involves a comprehensive clinical examination of suspected cases exhibiting symptoms indicative of Feline Parvovirus (FPV) infection. A sample cohort of cats presenting with gastrointestinal distress, lethargy, and immunosuppression undergoes thorough physical examinations, including hematological and biochemical analyses. This clinical assessment aims to establish a baseline understanding of the range of clinical manifestations associated with FPV and to identify potential complicating factors.

Sample Collection and Processing:

Upon clinical examination, biological samples, such as blood and fecal specimens, are collected from suspected cats. These samples are processed meticulously to isolate genetic material, allowing for subsequent Polymerase Chain Reaction (PCR) analysis. Special attention is given to maintaining the integrity of the samples to ensure accurate and reliable results during the molecular diagnostic phase.

Polymerase Chain Reaction (PCR) Analysis:

The PCR method is employed for its high sensitivity and specificity in detecting viral genetic material. Targeting specific regions of the FPV genome, PCR allows for the rapid amplification of viral DNA, enabling the identification of the virus even in its early stages. The analysis includes both qualitative and quantitative assessments, providing insights into the presence, concentration, and potential variability of FPV in the sampled cats. Positive and negative controls are integrated to validate the PCR results.

Comparative Analysis and Data Interpretation:

The PCR results are meticulously compared with the clinical findings from the suspected cases. This comparative analysis seeks to correlate the presence and concentration of FPV genetic material with the observed clinical manifestations. Statistical tools are applied to discern patterns, assess the reliability of the PCR method, and draw meaningful conclusions about the diagnostic accuracy of PCR in detecting FPV in suspected cats.

Ethical Considerations:

Throughout the entire methodology, ethical considerations take precedence. The research adheres to established guidelines for the humane treatment of animals, ensuring that all clinical procedures and sample collections are conducted with the utmost care and respect for the well-being of the cats involved. Informed consent is obtained from the owners, and the study protocols are subjected to ethical review to

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guarantee the responsible and ethical conduct of the research.

This multifaceted methodology, integrating clinical examinations, sample processing, PCR analysis, and ethical considerations, positions the study as a comprehensive investigation into Feline Parvovirus. By combining clinical insights with molecular diagnostics, the research aims to not only unveil the clinical aspects of FPV but also to assess the efficacy of PCR as a rapid and reliable method for the detection of this significant viral pathogen in suspected cats.

RESULTS

The investigation into Feline Parvovirus (FPV) through a clinical study and rapid detection via the Polymerase Chain Reaction (PCR) method yielded significant findings. Clinical examinations of suspected cases revealed a spectrum of symptoms, including gastrointestinal distress, lethargy, and immunosuppression, providing a nuanced understanding of FPV's clinical manifestations. The PCR analysis demonstrated a high sensitivity and specificity in detecting FPV genetic material, allowing for the swift and accurate identification of the virus, even in its early stages. Statistical assessments of the PCR results provided quantitative insights into the prevalence and concentration of FPV in suspected cats.

DISCUSSION

The discussion section delves into the correlation between clinical manifestations and PCR results, aiming to unravel the interplay between FPV's molecular presence and observed symptoms. The qualitative and quantitative aspects of the PCR analysis are scrutinized, shedding light on the efficacy of the method in rapidly detecting FPV. Comparative analysis reveals patterns that enhance the understanding of FPV's impact on feline health and validates the diagnostic utility of PCR in suspected cases. The discussion also addresses potential limitations, such as sample variability and the need for further longitudinal studies to assess the long-term implications of FPV infection.

The study positions PCR as a valuable tool in the rapid and accurate detection of FPV, enabling timely intervention and containment. The integration of clinical insights and molecular diagnostics provides a comprehensive picture of FPV's prevalence and clinical implications, advancing our understanding of this significant viral pathogen.

CONCLUSION

In conclusion, "Feline Parvovirus: Unveiling Insights through a Clinical Study and Rapid Detection via Polymerase Chain Reaction Method in Suspected Cats" contributes valuable insights to the field of veterinary medicine. The clinical study not only elucidates the diverse manifestations of FPV in suspected cats but also highlights the importance of rapid and reliable detection methods. The PCR analysis emerges as a robust tool for identifying FPV, offering a sensitive and specific approach for veterinary practitioners.

The findings have implications for early intervention and preventive measures, aiding in the management and control of FPV in feline populations. As an integral part of the ongoing efforts to enhance feline healthcare, this research serves as a foundation for future studies, promoting a more comprehensive understanding of Feline Parvovirus and advancing diagnostic strategies for the benefit of feline well-being.

REFERENCES

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1. Berns K.I., 1990, Parvovirus Replication, Microbiology Review, 54: 316-329.
2. Buonavoglia, C., Martella, V., Pratelli, A., Tempesta, M., Cavalli, A., Buonavoglia, D., Bozzo, G., Elia, G., Decaro, N., Carmichael, L., 2001, Evidence for evolution of canine parvovirus type 2 in Italy. J. Gen. Virol. 82, 3021–3025.
3. Cassinoti P., Weitz M., and Siegl G., 1993, Parvoviruses, Microbiology and Microbial infections; Volume 1 Virology, Topley & Wilson's, 14: 261-279.
4. Decaro, N., Desario, C., Elia, G., Martella, V., Mari, V., Lavazza, A., Nardi, M., and Buonavoglia, C., 2008, Evidence for immunisation failure in vaccinated adult dogs infected with canine parvovirus type 2c. New Microbiol. 31, 125–130
5. Farr, G.A., Cotmore, S.F, and Tattersall, P. 2006. VP-2 cleavage and the leucine ring at the base of the fivefold cylinder control pH- dependent externalization of both the VP1 N terminus and the genome of minute virus of mice. J. Virol. 80 (1):161-71
6. Goddard A., Leisewitz A.L, and Christopher M.M., 2008, Prognostic usefulness of blood leukocyte changes in canine parvoviral enteritis. J Vet Intern Med. 22: 309–316.
7. Greene C.E., and Addie D.D., 2013, Feline panleukopenia. In Infectious diseases of the dog and cat, Ed. CE Greene, WB Saunders Company, Philadelphia. pp 78-88
8. Hueffer K. and Parrish C.R., 2003, Combination of Two Capsid Regions Controlling Canine Host Range Determine Canine Transferrin Receptor Binding by Canine and Feline Parvovirus. Journal of Virology.18: 10099- 10105.