Human Noroviruses: Species Specific or Not?

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Human noroviruses (HuNoVs) are members of the Caliciviridae family and a common cause of GI illness in humans but are generally considered to be species specific; however, the genetic similarity of certain porcine, bovine, and canine norovirus genogroups has raised the possibility of zoonotic transmission. This study was designed to determine whether pet dogs could serve as potential carriers of HuNoVs. Stool samples were obtained from pet dogs (n = 92), many of which were suffering from vomiting and diarrhea (n = 45) and/or had had direct contact with humans who had symptoms suggestive of HuNoV (n = 54). Participants completed a questionnaire about the people and dogs in the household (age, number) and their signs (type, duration). Samples were screened for HuNoV genogroups GI, GII, and GIV using real-time PCR assay. The authors found HuNoV in 4 dogs (4.3%), all of which had had direct contact with symptomatic people and lived in households with small children; 2 of the dogs also had GI signs. The authors speculated that pet dogs are easily exposed to HuNoV on contaminated surfaces when people, particularly children, have uncontrolled bouts of vomiting and diarrhea. The authors concluded that HuNoV can remain intact in the canine GI tract (ie, pet dogs can be HuNoV carriers). It remains unclear whether these strains can replicate in dogs.

From the Editor

Commentary

This study suggests a different conduit for HuNoV transmission and provides enough novel clues that pet owners should exercise rigorous hand washing and hygiene practices during norovirus outbreaks. It is unclear whether intact HuNoVs isolated from canine fecal samples were simply carried or were replicated in the intestine. Future studies should examine the association between noroviruses and clinical signs in canine populations, and molecular epidemiologic studies should evaluate the dynamics of transmissibility between dogs and humans.—*Indu Mani, DVM, DSc*

Source

Pet dogs—A transmission route for human noroviruses? Summa M, von Bonsdorff C-H, Maunula L. ***J CLIN VIROL*** 53:241-247, 2012.

Research Note

Testing for *Bartonella* in Cats

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Bartonella spp have been shown to cause disease in humans and domestic animals. Typically, cats have subclinical infections, but results of *B henselae* blood culture, PCR assay on blood, and IgG antibody assays do not always correlate with presence of clinical signs and presence of IgG does not always correlate with bacteremia. This study was conducted to determine if measuring *Bartonell*a spp IgM antibodies can help identify infected cats. Although all experimentally infected cats developed *Bartonella* IgM antibodies, the IgM assay results for client-owned cats did not always agree with PCR assay results. Testing client-owned cats for *Bartonella* infection via IgM assay, therefore, would be of little value.

Source

Detection of *Bartonella henselae* IgM in serum of experimentally infected and naturally exposed cats. Ficociello J, Bradbury C, Morris A, Lappin MR. ***J VET INTERN MED*** 25:1264-1269, 2011.

CONTINUES

FOR MORE…

See **Canine Bartonellosis** by Dr. Edward B. Breitschwerdt at **cliniciansbrief.com/canine-bartonellosis**

Canine Tapeworm: A Zoonotic Reminder

http://www.onehealthinitiative.com/

This report briefly describes *Dipylidium caninum* infection of a 4-month-old boy. The child was initially misdiagnosed with pinworm infection—an understandable error, since pinworm infection is common among young children and the 2 infections appear grossly similar. However, follow-up stool examination revealed *D caninum* proglottids. The child had suffered symptoms of abdominal pain and irritability for 2 months and a CBC revealed minor eosinophilia. Treatment with mebendazole for pinworm infection temporarily reduced the child's symptoms, but *D caninum* was successfully cleared with a single dose of praziquantel once an accurate diagnosis was made. The family's pet dog had been treated for intestinal worms just 2 months before onset of the child's symptoms. Reports have suggested that dogs, after biting infected fleas, may transfer *D caninum* infections to humans by licking them.

Commentary

Although this case does not describe infection in a companion animal, it is certainly a reminder of the important intersection of human and veterinary medicine. True incidence of human infection with *D caninum* is unknown, and although symptomatic *D caninum* infections are rare in humans, veterinarians need to remember that it is indeed a zoonotic disease, with particular ability to cause illness in the young or immunocompromised. This is one more compelling reason to encourage pet owners to be diligent about antiparasitic prophylactics.—*Carly Jordan, PhD*

Source

Dipylidium caninum in a 4-month old male. Taylor T, Zitzmann MB. ***CLIN LAB SCI*** 24:212-214, 2011.

Applying Global Knowledge to Clinical Reality

http://www.onehealthinitiative.com/

Participatory epidemiology (PE) is an evolving area of veterinary epidemiology applied to the systematic use of participatory approaches and methods to better understand diseases and options for animal disease control. In contrast to a more conventional "ivory tower" approach, PE relies on close collaboration with local animal keepers to design and conduct disease control programs and operates on the premise that native populations know their animals and their environment best.

PE uses investigational methods that are culturally sensitive and do not require participants to be literate. PE is often supported by triangulation, which is the use of 2 or more methods or data sources within the same study to improve validity. Thus, the observations of livestock keepers might be cross-checked with postmortem examinations and conventional laboratory-based diagnostics to yield a better result. PE gives local participants a greater stake in the questions that are asked and the programs ultimately implemented.

PE was part of the highly successful global campaign to eradicate rinderpest. Several challenges exist in implementing PE in developing regions, however, and it has yet to gain wide acceptance in official circles. The authors listed several examples in which PE was applied successfully in controlling livestock diseases in the UK, as well as missed opportunities for which PE might have yielded better outcomes. The authors concluded that PE showed promise and also raised challenges for veterinary epidemiologists working in developing regions.

Commentary

This study evaluated epidemiologic methods in livestock populations; however, its lessons can be applied to small animal patient and research populations as well. This is particularly relevant in the identification and control of emerging infectious (particularly zoonotic) diseases; it is also useful in research settings involving large populations of experimental animals and in any clinical situations (eg, shelters, catteries) for which group epidemiology would be helpful.—*Indu Mani, DVM, DSc*

Source

Participatory epidemiology: Approaches, methods, experiences. Catley A, Alders RG, Wood JLN. ***VET J*** 191:151-160, 2012.

CONTINUES

Predictor Role of Hypocalcemia

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In humans, ionized hypocalcemia (iHCa), a predictive factor following trauma, is associated with severe injury and low survival rates. Several possible mechanisms for trauma-related iHCa include increased calciuresis, dilution during fluid resuscitation, and cellular uptake of calcium following musculoskeletal injuries. In dogs, iHCa has not been consistently helpful in determining risk for mortality after blunt trauma injury. The focus of this retrospective study was to determine the incidence of iHCa in dogs with blunt and penetrating traumatic injuries and determine the association of iHCa with mortality, duration of hospitalization, and requirement for intensive care therapy. Of 88 study dogs, those with iHCa (n = 14) were more severely injured and subsequently required increased intensive care therapy. Dogs with abdominal trauma were significantly more likely to have iHCa than those with other injuries. Dogs with iHCa had a lower survival rate as compared with dogs with normocalcemia. Prospective studies should include a large number of severely injured dogs and investigate iHCa and other prognostic indicators.

Commentary

Sixteen percent of this population of traumatized dogs presented with iHCa. When analyzing a cut-off value for ionized calcium (iCa) that would predict mortality, the authors found that iCa <1.2 mmol/L (2.4 mEq/L) was 35% sensitive and 99% specific. A moderate correlation was found between total calcium (tCa) and iCa; however, at lower values, tCa was not predictive of iHCa. The negative predictive value of tCa for iHCa was 92%; that is, if tCa levels are normal, it is unlikely that iHCa is present. However, low tCa may be used as a trigger to check for iHCa.

This study showed that dogs presenting with traumatic injuries and iHCa are more likely to require longer hospitalization times and less likely to survive. Although a larger, prospective study is needed to verify the findings, these results and support in human literature point to the significance of iHCa in dogs with blunt or penetrating traumatic injuries.—*Lisa Powell, DVM, DACVECC*

Source

Ionized hypocalcemia as a prognostic indicator in dogs following trauma. Holowaychuk MK, Monteith G. ***JVECC*** 21:521-530, 2011.

Research Note

Revealing Data on Rickettsiae

Spotted fever group (SFG) rickettsiae, including *Rickettsia* spp, are recognized as emerging diseases. This study evaluated ticks and fleas collected from red foxes in southeastern France. Of the fleas, 10.5% tested positive for *R felis*, while 45.2% of ticks tested positive for *R massiliae*. Unlike a previously published study, no *Bartonella* spp were detected. These data confirm that the red fox can host infected ectoparasites. How this may contribute to distribution of SFG rickettsiae should be further evaluated.

Source

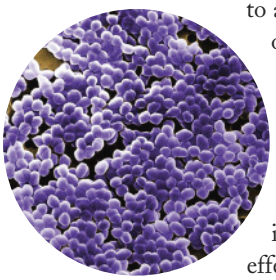
Rickettsiae in arthropods collected from red foxes (*Vulpes vulpes*) in France. Marié J-L, Davoust B, Socolovschi C. ***COMP IMMUNOL MICROBIOL*** 35:59-62, 2012.

http://www.onehealthinitiative.com/

Bacterial Contamination: Common Problem?

http://www.onehealthinitiative.com/

This study was conducted to determine the prevalence of bacterial contamination on standard equipment in small animal hospitals. Samples were collected 3 times at 4-month intervals from 10 hospitals. The visits were announced and staff was asked not to change routine cleaning protocols. Surfaces sampled were unknown to the participating clinics at the first visit only; the same items were reswabbed at follow-up visits. Samples from cage doors, stethoscopes, thermometers, and mouth gags were chosen because they regularly have direct contact with patients and the potential to act as fomites. Samples were cultured for enterococci and Enterobacteriaceae organisms. Isolated organisms were tested for antimicrobial susceptibility and virulence profiling. Contamination with Enterobacteriaceae was found to be rare, but enterococci, including *Enterococcus faecium* (35.4%), *E faecalis* (33.2%), and *E hirae* (28.3%), were isolated from at least 1 surface at all 10 hospitals. Stethoscopes were contaminated with enterococci in 7 of 10 hospitals, and half of surveyed veterinarians reported never or almost never cleaning their stethoscopes. While cleaning protocols varied, they appeared highly effective in eliminating contamination by Enterobacteriaceae organisms but less effective against enterococci. Surface contamination with multidrug-resistant enterococci is a potential concern for pets and humans; preventive measures, such as review and update of cleaning protocols, may help minimize contamination.



Commentary

These findings suggest effective avoidance of Enterobacteriaceae contamination but more common contamination with enterococci, with isolates demonstrating multidrug resistance. Only 50% of hospitals had standard operating protocols for surface decontamination. In addition, contamination with enterococci still occurred despite protocols. It is unclear whether contamination leads to hospital-acquired infection; however, even the potential for patients to become carriers of multidrug-resistant microorganisms should prompt veterinarians to require decontamination protocols and regularly update them to minimize surface contamination by enterococci.—*Jennifer Ginn, DVM, MS, DACVIM*

Source

Surveillance of bacterial contamination in small animal veterinary hospitals with special focus on antimicrobial resistance and virulence traits of enterococci. KuKanich KS, Ghosh A, Skarbek JV, et al. ***JAVMA*** 240:437-445, 2012.

Half of surveyed veterinarians reported never or almost never cleaning their stethoscopes.