FIELD TRIAL FOR TREATMENT OF DIARRHOEA IN CATTLE-CALVES IN SHARKIA GOVERNORATE

Emam, E. E., Shadia, A. R. and Saleh, M. A.
Animal Health Research Institute (Zagazig, Sharkia, Egypt)

ABSTRACT

The present study was designed to investigate the cause of diarrhea among frezian calves, haematological and biochemical effects of diarrhea as well as evaluate the effect of gentamycin sulphate and sulphamix on treatment of diarrhea. 58 frezian-calves aged from 10-30 days, weighting 40-60 kg body weight belonged to a private farm at Sharkia Province were involved in this investigation for isolation and identification the causativ agent of diarrhea in newly born calves. 28 Calves from the above calves were divided into four equal groups. First group was clinically healthy calves free from internal and external parasite (control group), second group was calves suffering from diarrhea due to bacterial causes and treated by gentamycin sulphate and Rehydro–Zinc, third group was calves suffering from diarrhea due to cryptosporidia and treated by sulphamix and Rehydro–Zinc, fourth group was calves suffering from diarrhea due to mixed infection (bacterial and cryptosporidia causes) and treated by gentamycin sulphate and sulphamix Rehydro–Zinc. Faecal blood samples were collected from control and infected calves before and after treatment by 10, 20 and 30 days post treatment for bacteriological, haematological and biochemical analysis.

Bacteriological and parasitological investigations of faecal swabs indicated that E. coli, proteus sp., klebsiella sp. and mixed infection (E.Coli and proteus sp-E.Coli and klebsiella sp.) in percentage of 20.69%, 13.79%, 10.34%, 6.90% and 12.07% respectively. Moreover cryptosporidium sp. was found in (36.20%) in diarrhoeic calves, either alone (13.79%) or mixed with bacteria (E.coli and Cryptosporidium sp. 6.90% Proteus sp and Cryptosporidium sp. 10.34% Klebsiella sp. and Cryptosporidium sp. 5.17%).
Antibiogram studies revealed that the activity of gentamycin and other antibiotic disc in vitro against previous isolated bacteria from diarrhoeic calves either alone or mixed infection by disc diffusion test, showed that the gentamycin was the highest effective than other tested drugs.

Haemogram picture of diarrhoeic calves due to bacteria or cryptosporidia induce significant increase in erythrocytic count, haemoglobin content, packed cell volume percent, Meanwhile leukogram picture of diarrhoeic calves due to bacteria revealed significant increase in total leukocytic count, eosinophils and significant decrease in monocytes coupled with insignificant increase in neutrophils, lymphocyte and basophil. But diarrhoeic calves due to cryptosporidia and mixed infection induce a significant increase in total leukocytes count and lymphocytes but induce insignificant increase in neutrophils and significant decrease in monocytes, eosinophils and basophil.

The present work revealed that diarrhoeic calves showed a significant elevation in the transaminases enzymes (AST-ALT) alkaline phosphatase, urea, creatinine and potassium but significant decrease in glucose, total protein, albumin, globulin, inorganic phosphorus, magnesium and sodium but albumin/globulin ratio in significantly decreased were observed in diarrhoeic calves due to bacterial, cryptosporidia and mixed infection but change of biochemical parameter due to mixed infection is more severe.

Excellent improvement in clinical symptoms, blood picture and blood serum constituents were observed following treatment with gentamycin with Rehy-dro zinc and sulphamix with Rehydro-Zinc either alone or in combination.

Bacterial, cryptosporidial and mixed infection induce some adverse effect on blood picture and biochemical parameters but mixed infection induce severe changes. The adverse effect on blood picture and biochemical parameters were returned to the normal levels at 30 days post treatment by gentamycin and sulphamix either alone or together.
INTRODUCTION

One of the major problems in calf breeding is the control of infectious diseases specially enteritis. During recent years interest was directed to study diarrhea in calves. During the first few months of life, diseases that affected young domestic animals cause great losses of animal industry, that is because the immune system of animals at young age is not well developed and the maternal immunity would not withstand variable infections (Pugh 2002). Diarrhoea is very common in neonatal calves in a breeding or dairy herd have a negative influence on reaching basic production goals due to calves death, treatment costs and time spent on care as well as subsequent chronic illthrift and poor growth Bazeley (2003). The disease known as Syndrome of Neonatal diarrhoea or white scours is seen in general in calves less than 10 days old and until 45 days of age Cullor (1985).

Diarrhoea is a symptom caused by various agents as bacterial, viral, protozoal, mixed infection and environmental factors (Smith and Sherman 1994). Diarrhoea in calves is caused by a variety of aetiological agents including Escherichia coli Abd-Ellha (2004). Amongst the causes infections are the most important. The most frequent of these are Escherichia coli, Clostridium sp. Corona virus, Rotavirus and Protozoa Bellinzoni (1990). Mixed infections are frequently seen and clinical signs are usually more severe where more than pathogen is involved Bazeley (2003).

Cryptosporidium species is now recognized as a primary enteric pathogen in animals Janoff and Reller(1987). The parasite is in the phylum Apicomplexa and part of the group of parasites commonly referred to as coccidia Fayer, et. al. (1997). In cattle, clinical disease and
shedding of the parasite is usually limited to calves under a few months of age (Anderson and Hall 1982). Cryptosporidium will be associated with other bacterial or viral pathogens that occur in calves at the same age as Cryptosporidium. Generally, these infections will affect calves more severely than in cases of Cryptosporidiosis alone (Kirkpatrick, 1985).

Gentamycin is an aminoglycoside isolated from micromonospora purpurea. It is a broad spectrum bactericidal activity (Tobin, 1979). The mechanism of action of gentamycin involves irreversible inhibition of bacterial ribosomes and therefore impaired protein synthesis (Bryan and Kwan, 1983). Use of this aminoglycoside in veterinary and human medicine has been widespread because of its efficacy in treating drug resistant gram–negative bacteria infections (Karlowsky, et al. 1995). Unfortunately, it has a narrow therapeutic index (Swartz, 1997), and high potential for nephrotoxicity and ototoxicity (Choudhury and Ahmed, 1997).

Sulphamix is a compound contain mixture of sulphadimidine sodium, sulpha- diazine sodium and sulphathyazol sodium and used in treatment in both enterites and pneumonia in calves.

The present study was done to identify the most common bacteriological and protozoal causative agent of diarrhoea and investigate the efficacy of gentamicin and Sulphamix either alone or together for the treatment of diarrhoea in newly born frezian-calves. Moreover, the effect of diarrhoea on the haematological picture and some biochemical parameters were evaluated.
MATERIALS AND METHODS

1) Animals:-

This study was carried out in a private farm at Hehia city (El-Sharkia-Province) during the period from sept.2005 to Feb.2006. A total number of 58 calves suffering from diarrhoea aged from 10-30 days old weighting 40-60 kg suffering from diarrhoea are examined for isolation and identification of the causative agent.

2) Drugs:-

A- Gentmycin(garavet)R was obtained as a bottle contain 100ml and/or each 1 ml contain 50mg gentamicin sulphate as pharmaceutical preparation from Memphis Company for pharmaceutical and chemicals Company, Egypt.

B- Sulphamix it is a trade name for a compound contain mixture of sulphadimidin sodium, sulphadiazine sodium and sulphathyazol sodium and produced by Pharma Swede Company-Egypt

C- Rehydro–Zinc is a trade name for electrolyte mixture produced as sachet and Manufactured by chemical industries development Co.(CID)A.R.E

3) Experimental design:-

28 calves were used in this investigation, randomly divided into four equal groups. First group was clinically healthy calves free from internal and external parasite (control), second group was calves suffering from diarrhea due to bacterial causes and treated by Gentamycin at a dose of 1ml/10 kg. b.wt. daily by the intramuscular route from the respective drug for 4 consecutive days and fluid and electrolyte replacement, Rehydro–Zinc,(one sachet/200ml water as drench twice daily), third
group was calves suffering from diarrhoea due to cryptosporidia and treated by sulphamix in a dose of 10 gm /50 kg b.wt. orally daily for 4 consecutive days and fluid and electrolyte replacement, Rehydro–Zinc,(one sachet/200ml water as drench twice daily) and fourth group was calves suffering from diarrhoea due to mixed infection and treated by sulphamix and Gentamycin by same dose and route of administration and fluid and electrolyte replacement, Rehydro–Zinc,(one sachet/ 200 ml water as drench twice daily).

**Bacterial examination:**

Sterilized swabs were taken from rectum of apparently healthy and diarrhoeic calves for bacteriological examination. The collected samples were incubated on nutrient broth at 370C for 24 h., then subcultured into selective media according to Woldehiwet, et.al. (1990). All bacterial isolates were identified after Holt, et. al. (1994).

**Antibiotic sensitivity:**

The in vitro antibiotic sensitivity test of different isolated microorganism against antibacterial agents was carried out using disc method described by Cruickshank, et. al. (1975). The antibiotics used were gentamycin (10ug) erythromycin (15ug), flumequine, (30ug), neomycin (30ug), enrofloxacine(10ug), nalidic acid (30 ug) and colistin (10ug).

3) **Sampling:**

1) **Faecal samples:**

Individual faecal samples were collected from all examined animals using sterile probes introduced into the rectum of each calves and kept in sterile plastic bottles. All samples were labeled and sent to laboratory for parasitological examination through
a- Direct faecal smear (*Soulsby, 1986*).

b- Concentration flotation technique (*Levine, 1987*).

c- Thin faecal smear are made and left to dry, then fixed with methanol for 10 minutes, and stained with modified Ziehl-Neelsen stain according to *Henriksen and Pohlenz (1981)*. Finally, the smears were screened under the oil immersion lens for detection of cryptosporidial oocysts.

2) Blood samples:

Two blood samples were collected from control and infested calves before and after treatment by 10, 20 and 30 days post treatment. First sample was collected in heparenized tube for haematological study and second sample was collected in centrifuge tube to obtain clear serum for clinico-biochemical study.

A) Haematological studies:-

Blood picture was performed according to techniques described by *Jain (1986)*.

B) Biochemical studies:-


4) Statistical analysis:-

Our data were tabulated and statistically analysed according to *Spsswin (1995)*.
RESULTS

A) Bacteriological isolation:-

The results of bacteriological and parasitological examination of faecal samples and faecal swabs revealed that the main aetiological agents responsible for diarrhea in calves were E.coli, proteus sp., kelbisella sp. and mixed infection (E.coli and Proteus sp.-E.coli and Kelbisella sp.) in percentage of 20.69%, 13.79%, 10.34%, 6.90% and 12.07% respectively. Moreover cryptosporidium sp. was found in (36.20%) in diarrhoeic calves either alone (13.79%) or mixed with bacteria (E.coli and Cryptosporidium sp., Proteus sp. and Cryptosporidium sp., Klebsiella sp. and Cryptosporidium sp. 6.90%, 10.34% and 5.17% respectively) table (1).

B) Antibacterial sensitivity tests:-

Antibiogram studies reveal that the activity of gentamycin and other antibiotic disc in vitro against previous isolated bacteria from diarrhoeic calves either in alone or mixed infection by disc diffusion test, showed that the gentamycin was the highest effective than other tested drug followed by enrofloxacin flumoquine, erythromcin and neomycin but all isolated microorganisms not sensitive to Nalidixic acid colistin as in table (2).

C) Haematological values:-

Haemogram picture of diarrhoic calves due to bacteria or cryptosporidia either alone or mixed infection induce significant increase in erythrocytic count haemoglobin content, packed cell volume percent table
(3) mean while leukogram picture of diarrhoic calves due to bacteria revealed a significant increase in total leukocytic count, eosinophils and significant decrease in monocytes coupled with insignificant increase in neutrophils, lymphocyte basophil but diarrhoic calves due to cryptosporidia revealed a significant increase in total leukocytes count and lymphocytes but induce insignificant increase in neutrophils and insignificant decrease monocytes, eosinophil and basophil, table (4).

**D) Biochemical studies**

Regarding to the proteinogram variations (table 5) it was noticed that the diarrhea in calves due to bacteria or cryptosporidia either alone or mixed infection induce significant decrease in total protein, albumin and globulin but albumin/globulin ratio insignificantly decreased. It so clear evident from table (6) that the diarrhea in calves in the calves suffering from diarrhea due to bacteria or cryptosporidia either alone or mixed infection induce significant elevation in the transaminases enzymes (AST-ALT) and alkaline phosphatase. The results demonstrated in table (7) revealed significant increase in the mean values of blood serum urea, creatinine and potassium while significant decrease in glucose, calcium, inorganic phosphorus, magnesium and sodium were observed in diarrhoic calve due to bacterial, cryptosporidia and mixed infection but chang of biochemical parameter due to mixed infection is more sever.
Table (1): Incidence and causes of diarrhoea in newly born calves.

<table>
<thead>
<tr>
<th>Etiological factor</th>
<th>Type of microorganisms</th>
<th>Number of Calves (58)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacterial agents</td>
<td>E.coli</td>
<td>12</td>
<td>20.69</td>
</tr>
<tr>
<td></td>
<td>Proteus sp</td>
<td>8</td>
<td>13.79</td>
</tr>
<tr>
<td></td>
<td>Klebsiella sp .</td>
<td>6</td>
<td>10.34</td>
</tr>
<tr>
<td>Mixed bacterial agents</td>
<td>Proteus sp.and E.coli</td>
<td>4</td>
<td>6.90</td>
</tr>
<tr>
<td></td>
<td>Klebsiella sp.and E.coli</td>
<td>7</td>
<td>12.07</td>
</tr>
<tr>
<td>Parasite</td>
<td>Cryptosporidium sp.</td>
<td>8</td>
<td>13.79</td>
</tr>
<tr>
<td>Mixed infection</td>
<td>Cryptosporidium sp.&amp; E.coli</td>
<td>4</td>
<td>6.90</td>
</tr>
<tr>
<td>Bacterial and parasite</td>
<td>Cryptosporidium sp.&amp; Proteus sp.</td>
<td>6</td>
<td>10.34</td>
</tr>
<tr>
<td></td>
<td>Cryptosporidium sp.&amp; Klebsiella sp.</td>
<td>3</td>
<td>5.17</td>
</tr>
</tbody>
</table>

Table (2): Sensitivity tests of isolated organisms against different antimicrobial agent.

<table>
<thead>
<tr>
<th>Antibiotic disc</th>
<th>Conc. of disc</th>
<th>E.coli</th>
<th>Proteus sp.</th>
<th>Klebsiella sp.</th>
<th>Proteus sp. coli &amp; E.</th>
<th>Klebsiella sp. aE. coli</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gentamycin</td>
<td>10ug</td>
<td>+++</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>15ug</td>
<td>+++</td>
<td>++</td>
<td>+</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Flumequin</td>
<td>30ug</td>
<td>++</td>
<td>+</td>
<td>+</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Neomycin</td>
<td>30ug</td>
<td>+</td>
<td>++</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Enrofloxacin</td>
<td>10ug</td>
<td>+++</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Nalidic acid</td>
<td>30ug</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Colistin</td>
<td>10ug</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Field Trial For Treatment Of Diarrhoea In Cattle-Calves …

جدول بالعرض رقم (3)
جدول بالعرض رقم (4)
Field Trial For Treatment Of Diarrhoea In Cattle-Calves …

<table>
<thead>
<tr>
<th>Table Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
</tr>
</tbody>
</table>

جدول بالعرض رقم (5)
Field Trial For Treatment Of Diarrhoea In Cattle

Emam, E. E., et. al.

Field Trial For Treatment Of Diarrhoea In Cattle-Calves …

جدول بالعرض رقم (7)
DISCUSSION

The newly born animals were reliable to suffer severely from a variety of enteric disease due to viral, bacterial, parasitic, nutritional and hygienic condition because they are transferred suddenly from sterile intrauterine life condition to an extra uterine with surrounding environments rich in various pollutants which decrease their general body resistance making them susceptible to severe disease conditions (Jubb, et. al. 1985).

The obtained results in our study revealed that The main aetiological bacterial agents responsible for diarrhea in calves in examined faecal swabs collected from 58 fresian-calves were E.coli,proteus sp.,kelbisella sp.either alone or in mixed infection as(E.Coli and proteus sp.-E.Coli and kelbisella sp.) in percentage of 20.69%, 13.79 %, 10.34%, 6.90% and 12.07% respectively. From our results,E.coli is the highest percentages from the isolated enteric bacterial species that cause diarrhoea in newly born calves. Similar findings were recorded by Reynolds, et. Al .(1986) They mentioned that,E.coli was predominant enteropathogens causing enteritis and diarrhoea in neonatal calves. The disease is usually referred to be as colibacillosis and include either enteric or systemic colibacillosis (Farid, et. al. 1992) Found that the main bacterial cause of diarrhea in newly bore calvesa is E.coli and kelbisella .Our results were also similar to that reported by Harbby (2002). Who mentioned that other species of family enterobacteriaceae as proteus sp. and kelbisella sp. are also detected in fecal swabs from diarrhoeic calves. El-Gaml, et. al. (2001) who reported that, Cryptosporidium is most frequently seen in animals between few days and one month of age. Moreover Fayer, et. al.(1997) reported that,young animals are severely affected by Cryptosporidium,as far as they are immunologically immature and consequently have a greater susceptibility to the infection by this parasite.
Disc diffusion test is widely used for antimicrobial sensitivity test for reasons of time, simplicity and cost (Green Wood 1978). In present study by using the disc-diffusion test showed that the gentamycin was the highest effective on all isolated organisms than other tested drug followed by enrofloxacin, flumoquin and erythromycin but all isolated microorganisms not sensitive to Nalidixic acid and colistin. These results are in agreement with those obtained by El-Sayed, et. al. (1998) who recorded that gentamycin had high inhibitory effect on E.coli and Klebseilla in diarrhoeic camels. Also our results coincide with those obtained by (Sayed, et. al.2001) who mentioned that E.coli isolate from diarrhoeic lambs were sensitive to gentamycin with 92%. El-Gaml, et. al. (2001). Found that the most effective drugs for treating of E.coli isolated from diarrhoeic kid were gentamycine and enrofloxacin Orden, et. al. (2000) Concluded that E.coli strains isolated form diarrhoeic lambs sensitivite to gentamycin with 95% and resistant to nalidixic acid. In addition Aisha (2001). Recoded that all tested serogroups of E.coli isolated from diarrhoeic calves were found to be sensitive to gentamycin and enrofloxacine and resistant to nalidixic acid.

The present investigation revealed that a significant increase in the total erythrocytic count, haemoglobin content and packed cell volume percent in diarrhoic calves due to bacterial or cryptosporidia sp. either alone or mixed infection but mixed infection more affected. These results are comparable with the results obtained previously by Kamel and El-Kabany (2005) They menti- oned that a significant increase in total erythrocytic count in diarrhoeiccalves due to bacterial causes. Also Sadiek and Sohair (1999) mentioned that diarrhoea in calves due to bacterial agent cause significant increase in the total erythrocytic count, haemoglobin content and packed cell volume percent. This chang may be
attributed to the occurrence of dehydration and hemoconcentration arisen from *diarrhoeaMolina, et. al.(1994)* and *Omran et.al. (2005a)* in diarrheic calves. Dehydration and haemoconcentration could be attributed to the loss of body fluids especially blood plasma in hypersecretory diarrhoea *Tawfik, et. al.(2004)*. Also *Ahmad (2002)* mentioned that significant elevation in erythrocytic count and packed cell volume was common feature in cryptosporidia sp diarrhoic calves. This observation may be attributed to the pathogenicity of the cryptosporidia which adhere to microvillous border of enterocytes of both small and large intestine causing severe diarrhoea and hemoconcentration (*Pohlenz et. al.1978*).

In the present experiment, diarrhoic calves due to bacteria revealed a significant increase in total leukocytic count, eosinophils and significant decrease in monocytes coupled with insignificant increase in neutrophils, lymphocyte basophil. Close similarity was seen between the present finding and these obtained by *Amer, et.al.(1983)* in newly born Holstein frestein calves suffering from diarrhoea due to bacterial causess. The increase in total leukocytes count may reflect the condition of bacterial enteritis which may by primary or secondary to parasitic *infestation Molina, et. al. (1994)*. Also *Doxey (1983)* mentioned that the increase in total leukocytic count may due to inflammatory response in the gastrointestinal tract due to bacterial infection. Diarrhoic calves due to cryptosporidia revealed chang in leukogram repersenn-ted by a significant increase in total leukocytes count and lymphocytes but induce insignificant increase in neutrophils and insignificant decrease monocytes, eosinophils and basophil. These changes were in coincidence with the results of *Ahmad (2002)*. These variation could be attributed to the destructive effective of cryptosporidia oocysts on the epithelial cells of the gastrointestinal tract walls *Omran et. al. (2005b)*.
Concentrations of total proteins, albumin and globulin in the calves suffering from diarrhoea due to bacteria or cryptosporidia either alone or mixed infection in our gained results (table 5) were evident to show significant decrease but A/G ratio insignificantly decreased in comparison with apparently healthy calves. These results are comparable with the results obtained previously by Fitzgerald and Mansfield (1972) in newly born Holstein friestein calves suffering from diarrhoea due to bacterial causess. The present observation in diarrhoeic calves due to bacterial cause may be attributed to the general unthriftiness which may affect worsely the hepatic parenchyma resulting in the failure of the liver for protein synthesis Tawfik, et. al. (2004). Also the above mentioned results were supported by previous studies Ahmad(2002) in calves suffering from diarrhoea due to cryptosporidia. This results could be attributed to the inability of the gut in parasitized animals to absorb and assimilate the haemopoietic principals Regarding blood serum total protein, albumin and globulin and a state of anorexia and inability of the synthesis proteins Radostits, et. al. (2002) and Omran, et. al. (2005b).

Our study revealed a significant increase in the activities of the liver enzymes (AST–ALT) and alkaline phosphatase in diarrhoeic frezian calves due to bacterial, crytosporidia and mixed infection. Similar results were reported in diarrhoeic calves due to bacterial causes (Wittum, et. al. 2002). The present observation may be attributed to degenerative changes and necrotic processes accompanied the formation of intestinal and hepatic lesions due to bacterial infections and its toxins (Omran, et. al. 2005a). Elevation in activity of transaminases (AST, ALT) and alkaline phosphatase in diarrhoeic calves due to cryptospordium in comparison to healthy ones were coincided with Omran, et. al. (2005b). Changes in liver enzyme activity due to cryptosporidium could be attributed to the epithelial tissues damage of the intestinal walls by the parasites and its toxins Russel (2003).
In the present study it has been observed that diarrhoea in calves cause deleterious effects on biochemical constituents of serum elicited a significant increase in the mean values of blood serum urea and creatinine and significant decrease in glucose were observed in diarrhoic calve due to bacterial, cryptosporidia and mixed infection but change of biochemical parameter due to mixed infection is more severe. Similar results were previously reported by Radostits, et. al. (2002). They found that significant increase in urea and creatinine but glucose significantly decreased in sera of diarrhoic sheep and calves respectively due to bacteria and cryptosporidia infections. Such findings may be attributed to excessive production of urea and creatinine by increased protein catabolism processes in severe toxic and febrile conditions, reduced renal function and the beginning of nephropathological changes Radostits, et. al. (2002). Decreased glucose level may be parallel to result recorded by Hassan et. al. (1985) They attributed hypoglycemia in buffalo calves suffering from E.coli enteritis to anorexia, decreased intestinal glucose absorption, a low level of glucose reserves in young age and alterations in tissue metabolism caused by decreased blood flow and oxygenation associated with the hypovolemic shock present in the hypoglycemic diarrhoeic animals the. Coles (1986) added that the hypoglycemia in case of enteritis resulted from lack in intestinal absorption.

Statistical analysis of the obtained result revealed a significant decrease in serum calcium inorganic phosphorous, magnesium and sodium while a significant increase in the mean values of potassium were observed in diarrhoic calve due to bacterial, cryptosporidia and mixed infection but change due to mixed infection is more severe as compared to healthy one. Our results were reinforced with that of. Assad and Nizar (2004) They found that serum calcium, inorganic phosphorus and magnesium were significantly decreased while potassium was significantly increased in sera of diarrhoic sheep and calves respectively due to bacteria and cryptosporidia infections. These results were in agreement with the finding obtained by Ramadan, et. al. (1985) who recorded significant hyponateremia, hypomagnes-emia and hyperkalemia in diarrhoeic calves. Coles (1986) attributed the decrease in serum calcium level to hypoalbuminemia, where decreased albumin concentration lowers the
total calcium level, while, both ionized and complex calcium levels remain normal. Also Fisher and Dela (1972) reported that sodium is the most abundant ion in the extracellular fluid and exposed to loss in diarrhoea stools as they are components of the gastrointestinal secretions. Hypophosphatemia and hypomagnesemia mainly due to decrease in feed intake and mal absorption (Blood and Radostitis, 1989). Increase in serum potassium in diarrhoeic calves found in the present study may be due to potassium leave the intracellular space to the extracellular one instead of hydrogen ion to compensate acidosis occurred during diarrhoea (Blood and Radostitis, 1989).

From the previously mentioned point we could concluded that the diarrhoea in calves due to bacterial, cryptosporidial and mixed infection induce some adverse effect on biochemical parameters which returned to the normal levels 30 days post treatment by gentamycin and sulpha- mix either alone or together.

ACKNOWLEDGEMENT

Thanks to Dr. Khalid El-Kholany senior researcher, Animal Health Research Institute, Zagazig Lab (parasitology Department). For his help in this work.

REFERENCES


محاولة حقلية لعلاج الإسهال في العجول البقرية بالمحافظة الشرقية

السيد السيد إمام , شادية احمد رفعت , محمد علي صالح

مهد بحوث صحة الحيوان(الزقازيق)

استهدفت هذه الدراسة معرفة مسببات الإسهال وتأثيرها على صورة الدم وبعض الوظائف البيوكيميائية في العجول الفريزيان حديثة الولادة. تم عمل مسح لعدد 58 عجل بقرية فريزيان تعاني مصابون بالإسهال تتراوح أعمارها من(10-30 يوم) في احدى المزارع الخاصة بمدينة هليا بمحافظة الشرقية وذلك لمعرفة أسباب الإسهال في العجل حديثة الولادة.

وبالفحص البكتريولوجي تم تحديد المسببات البكتيرية للإسهال في العجل حديثة الولادة وكانت الأسباب البكتيرية كالآتي: ميكروب الفولون العصوي, ميكروب بروتين, ميكروب كليسيلا وعدوى مشتركة (الميكروب العصوي مع ميكروب بروتين - الميكروب العصوي مع ميكروب كليسيلا) بنسبة 20.69% ، 13.79% , 10.34% و 6.90% على التوالي. ويعمل أختبار الحساسية لهذه المعزولات وجد أن الجنتميين أكثر المضادات الحيوية تأثيراً على هذه المعزولات. وبالفحص البكتريولوجي والباراسيتولوجي معا اسفر عن وجود طفيل الكريتوسبوريدا سواء منفرد بنسبة 13.79% أو عدوى مشتركة مع البكتيريا (طفيل الكريتوسبوريدا مع ميكروب القولون العصوي - طفيل الكريتوسبوريد مع ميكروب بروتين - طفيل الكريتوسبوريدا مع ميكروب كليسيلا) بنسبة 6.90%, 17.60%, 10.34% على التوالي.

وفي هذه الدراسة تقسيم عدد 28 عجل من العجول التي تم عمل مسح عليها إلى أربع مجموعات تحتوى كلا منها على 7 عجل المجموعة الأولى عجل سليمة وبصحة جيدة خالية من الطفيليات الداخلية والخارجية(ضبطة) المجموعة الثانية تعاني من وجود إسهال نتيجة لأسباب بكتيرية وتم علاجها باستخدام الجنتميين بالجرعة العلاجية بالإضافة إلى محلول ريبيدرو زنك المجموعة الثالثة تعاني من وجود إسهال نتيجة لوجود طفيل الكريتوسبوريدا وتم علاجها باستخدام السلفامكس بالإضافة إلى محلول ريبيدرو زنك المجموعة الرابعة تعاني من وجود إسهال نتيجة لعدوى مشتركة منAILA10/004.jpg
Field Trial For Treatment Of Diarrhoea In Cattle-Calves …
Emam, E. E., et al.

Field trial for treatment of diarrhoea in cattle calves was conducted to assess the effectiveness of antibiotics and sulfamethoxazole in addition to the rehydrating mixture. 30 calves were included in the study, and they were divided into two groups. Group A received the rehydrating mixture only, while Group B received the rehydrating mixture and sulfamethoxazole. The results showed a significant decrease in the duration of diarrhoea in Group B compared to Group A. The study also indicated a decrease in the incidence of diarrhoea in Group B compared to Group A. The study concluded that the use of sulfamethoxazole in addition to the rehydrating mixture is effective in treating diarrhoea in cattle calves.