

4. EXPERIMENTS AND RESULTS

Experiment No. (1):

Surveillance study to monitor *Clostridial* enteritis associated with mortalities in early weaned rabbits among rabbit's flocks at different localities in Egypt.

Objective:

Monitoring of enteritis associated with mortalities in early weaned rabbits caused by *Clostridial* spp.

Nineteen rabbit farms suffered from diarrhea and bloat with high mortalities in different Egyptian governorates were surveyed according to following criteria:

- Flock history of each examined flock was reported including: breed, age, total number of rabbits at day of examination, number of dead weaned rabbits at day of examination, housing, ration, previous medications and vaccinations.
- The observed clinical signs at time of examination.
- Palpation and inspection of diseased examined rabbits.
- Two rectal swabs from each examined apparently healthy as well as from diseased rabbits were collected.
- Recording of P.M. lesions of freshly dead weaned rabbits at time of visit.
- Liver samples As well as small and large intestine (which ligated at its ends) from freshly dead rabbits were collected and labeled.

- Feed and water samples were collected and labeled from each examined rabbit farms.
- All labeled collected samples were transported for the laboratory in a trial for isolation and identification of possible *Clostridial* spp. incriminated in that problem.

Results:

The data collected revealed:

- **The examined breeds were:** Flinder, Belgian, French, Erks, Hi-plus, Native, New- Zealand, Chinchilla, Gabali and Moshtohor
- **Age:** ranged from 3 to 9 weeks old.
- **Total No. of rabbits/ farm:** ranged from 35- 800.
- **Number of dead rabbits at each examined farm at day of examination:** ranged from zero - 20.
- **System of housing:** battery and ground breeding systems.
- **Type of ration:** commercial rations were used in all examined farms.
- Antibacterial agents were used in some examined farms.
- Most surveyed flocks were vaccinated against viral and bacterial hemorrhagic diseases vaccines.
- the most commonly observed clinical signs on weaned rabbits at the time of visiting the farm were severe bloat associated with offensive odour doughy brownish to bloody stained diarrhea (**Fig. 1**) that soil the region around anus and hind quarters (**Fig. 2**), inability to walk, depression and ruffled fur (**Fig. 3**)

- Palpation of clinically affected rabbits revealed that, some examined rabbits expressed pain response on palpation of their abdomens which were distended with gases.
 - P.M. examination showed that the small and large intestines had severe enteritis, typhlitis, ballooning with thickened wall, different degrees of necrosis and hemorrhages of the mucosa; offensive odour doughy brownish or bloody stained contents mixed with gases and the mesenteric blood vessels were engorged with blood (**Fig. 4, 5, 6, 7 and 8**). The liver showed congestion, enlargement, sub-capsular hemorrhages, necrosis especially at the liver margins (Fig. 9) and friability while the gall bladder was distended. The kidneys were congested and enlarged (**Fig. 10**) and the urinary bladder was filled with urine (**Fig. 11**).
 - The histopathological examination of livers collected from freshly dead weaned rabbits showed fibrosis of the portal area with newly formed bile ducts (**Fig. 12.A**), associated with diffuse kupffer cells proliferation and inflammatory cells infiltration in between the hepatocytes (**Fig. 12.B**). Severe congestion was observed in the central vein while the surrounding hepatic parenchyma had brown pigmented material (**Fig. 12. C**). The small intestine revealed necrosis which was involved the mucosal layer with desquamation of the lining epithelium while the underlying sub mucosa showed oedema, inflammatory cells infiltration and congested blood vessels and capillaries (**Fig. 12.D, E and F**). Microscopic lesions observed in the large intestine were diffuse mucosal necrosis and ulceration all over the lining epithelium with inflammatory cells infiltration in the lamina propria (**Fig. 12.G**).
- Full history of the examined rabbits, the total number and the status of the examined rabbits and the types and numbers of samples at different Egyptian governorates are seen in **Tables (8, 9 and 10)**, respectively.

Table (8): History of the examined rabbits at different Egyptian governorates

Governorates	Farms No.	No. of rabbits / farm	No. of dead rabbits at day of visit	Age (week)	Breeds	Clinical signs	Housing	pervious Vaccination	Pervious Medication
Port-said	1	600	5	6-8	Flinder, Belgian and French	=	B	*	AD3E
	2	350	8	5-8	French and Erks	=	B	*	AD3E
Giza	3	300	3	4-8	Hi-plus	=	B	*	Chlorotetracycline
	4	800	6	4-8	Hi-plus	=	B	*	Chlorotetracycline
	5	200	9	5-9	Hi-plus	=	B	*	AD3E
	6	400	3	5-8	Hi-plus	=	B	*	AD3E
Cairo	7	100	-	4-8	French and Native	=	B	-	-
	8	200	-	3-9	Chinchilla	=	B	-	-
Beni Suef	9	150	2	4-8	Flinder and Belgian	#	B	*	-
	10	400	2	4-8	French and Belgian	=	B	*	-
Fayoum	11	200	-	4-9	French and New-Zealand	#	B	*	Enrofloxacin
	12	350	-	4-9	New Zealand	#	B	*	-
	13	460	-	5-8	New Zealand	#	B	*	Oxytetracycline
El-Qaliubiya	14	430	-	4-6	Flinder and Belgian	=	B	*	-
	15	160	3	4-8	French and Erks	#	B	*	-
	16	50	1	4-9	French and Native	#	G	-	-
	17	35	-	4-7	Native	=	G	-	-
El-Sharkea	18	400	20	4-6	Gabali and Moshtohor	#	B	*	AD3E and Vit. E with selenium
El-Menoufia	19	600	12	5-7	French and Belgian	#	B	*	AD3E

B: Batteries breeding,

G: Ground breeding

*: The flock received both viral and bacterial hemorrhagic diseases vaccines

AD₃E: Vitamins A, D₃ and E

=: Diarrhea in weaned rabbits.

#: Diarrhea and bloat in weaned rabbits.

Vit.: Vitamin

Table (9): The total number and the status of the examined rabbits at different Egyptian governorates

Governorate	No. of examined rabbit farms	Total No. of examined rabbits/ farms	Status of the examined rabbits		
			Apparently healthy	Diseased	Freshly dead
Port Said	2	33	12	15	6
Giza	4	90	21	59	10
Cairo	2	16	8	8	-
Beni Suef	2	14	5	5	4
Fayoum	3	64	21	43	-
El-Qaliubiya	4	57	18	36	3
Al-Sharkia	1	20	4	12	4
Menoufia	1	35	6	26	3
Total	19	329	95	204	30

Table (10): Detailed history of the different types and numbers of samples at different Egyptian governorates.

Governorates	No. of examined farms	Examined feed and water samples	Examined rabbits samples (Rectal swabs, intestine and liver)	Total No. of examined samples
Port Said	2	4	78	82
Giza	4	6	180	186
Cairo	2	4	28	32
Beni Suef	2	4	36	40
Fayoum	3	6	104	110
El-Qaliubiya	4	9	132	141
Al-Sharkia	1	2	44	46
Menoufia	1	3	74	77
Total	19	38	676	714



Fig. (1): A rabbit shows severe bloat and doughy brownish diarrhea.

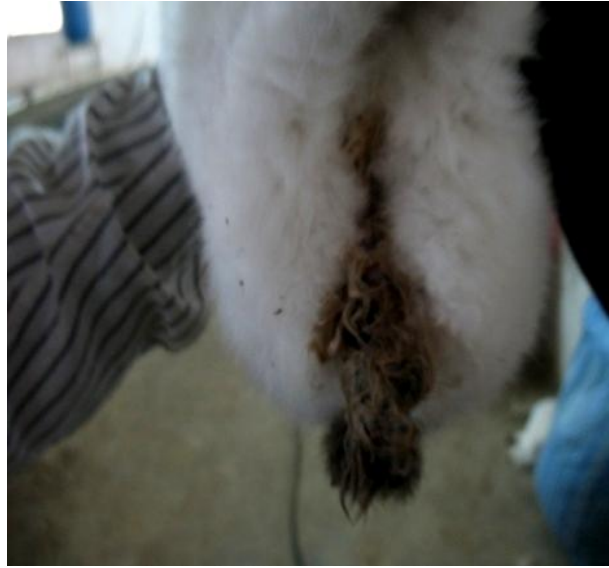


Fig. (2): A rabbit shows brownish diarrhea soils the region around the anus and the hind quarters.



Fig. (3): A rabbit shows inability to walk, depression and ruffled fur



Fig. (4): large intestine of rabbit exhibited ballooning and filled with gases



Fig. (5): A rabbit's large intestine is distended with gases and mixed with doughy brownish contents.



Fig. (6): A rabbit's small intestine shows severe enteritis.



Fig. (7): The intestinal mucosa of a rabbit shows different degrees of necrosis and hemorrhages, the intestine distended with gases and the mesenteric blood vessels are engorged with blood.

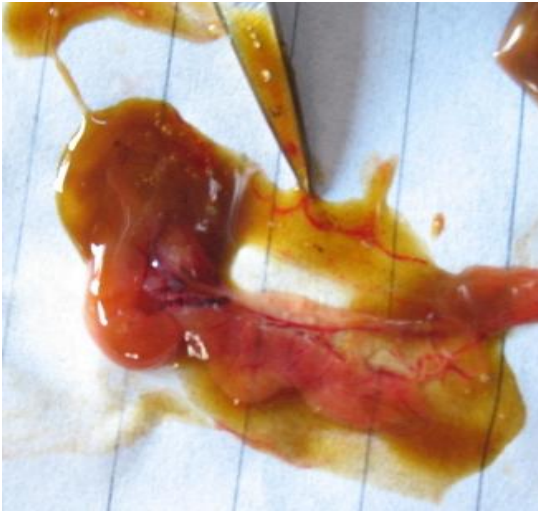


Fig. (8): The Intestinal lumen of a rabbit is filled with bloody stained contents.

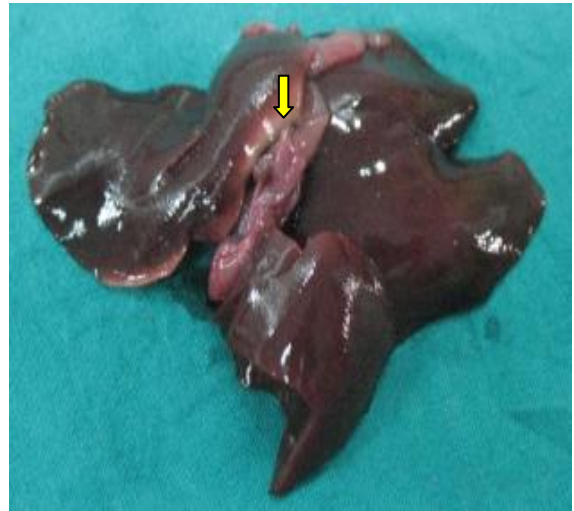


Fig. (9): A rabbit's liver reveals congestion, enlargement, sub-capsular hemorrhage and necrosis especially at liver's margins.

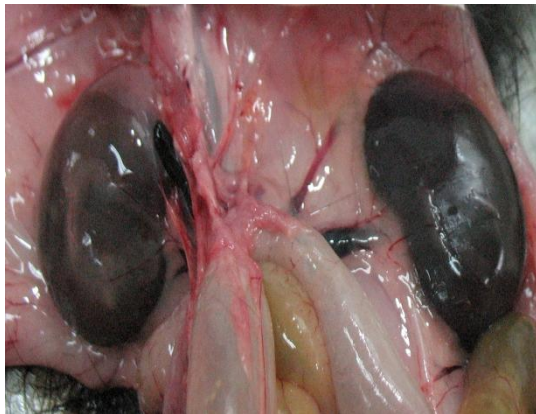


Fig. (10): congested and enlargement kidney.



Fig. (11): severely distended urinary bladder with urine.

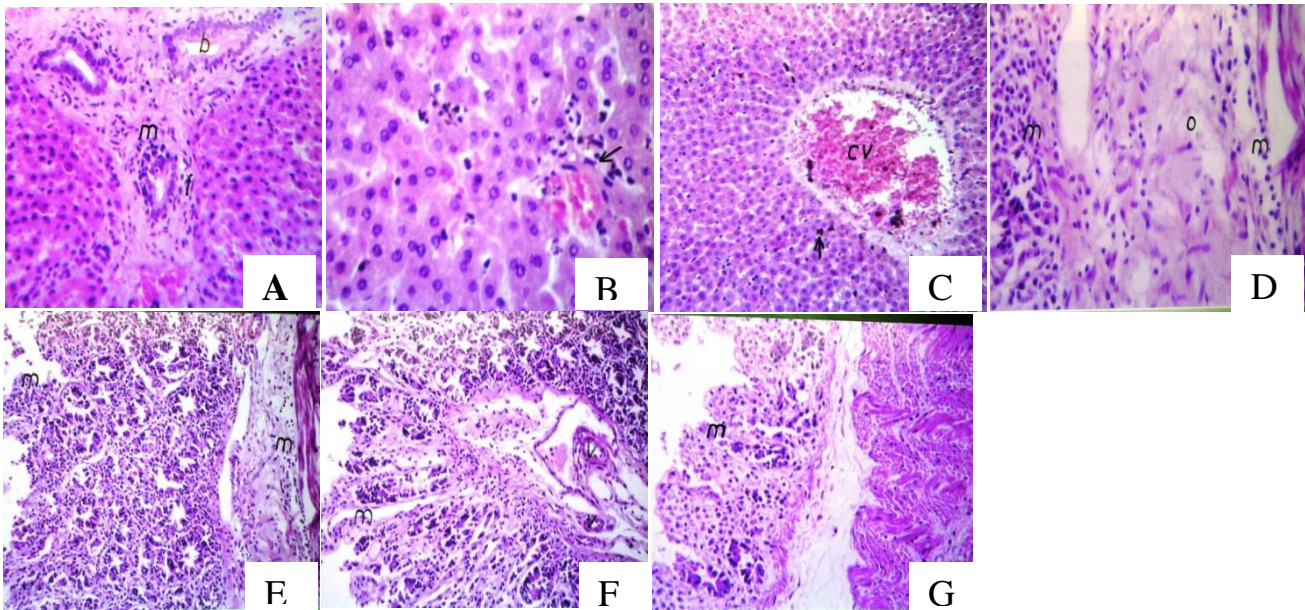


Fig. (12): The histopathological findings were as follow; (A): Liver of a rabbit showing fibrosis in the portal area (f) with multiple newly formed bile ducts (b). **H&E X 64, (B):** Liver of a rabbit showing diffuse kupffer cells proliferation (arrow) with inflammatory cells infiltration (m) in between the hepatocytes. **H&E X 80, (C):** Liver of a rabbit showing severe congestion in central vein (cv) with diffuse brown pigmented material (arrow) in between hepatocytes. **H&E X 40, (D):** Small intestine of a rabbit showing diffuse inflammatory cells infiltration (m) and oedema (O) in submucosal layer. **H&E X 40, (E):** Small intestine of a rabbit showing diffuse inflammatory cells infiltration (m) and oedema (o) in submucosal layer. **H&E X 80, (F):** Small intestine of a rabbit showing mucosal necrosis (m) with oedema (O) and congestion in blood vessels (v) of submucosa. **H&E X 40** and **(G):** Large intestine of a rabbit showing necrosis in the mucosal layer (m) and ulceration with inflammatory cell in lamina propria. **H&E X 64**

