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Research Article

PREVALANCE OF CLOSTRIDIA IN THE PATIENTS OF ACUTE DIARRHEA

¹Dr. Muhammad Hassan Tahir, ²Dr. Laraib, ³Dr. Muhammad Hassaan Anwar¹D.G Khan Medical College Dera Ghazi Khan, Pakistan²D.G Khan Medical College Dera Ghazi Khan, Pakistan³D.G Khan Medical College Dera Ghazi Khan, Pakistan**Abstract:**

Objective: Our surroundings are fully concentrated by a group of gram positive spore forming bacteria which usually live without oxygen and found in paths of stomach and intestines. These bacteria are the cause of many diseases of intestine disorder such as pain and swelling of colon which is a part of large intestine, poisoning and inflammation of the intestines which results into diarrhea. The main purpose of this research is to identify these different types of spore forming bacteria in the patients of the hospital and match them with the controls who are healthy people.

Methodology: Three hundred stool samples were taken from one hundred and fifty p of diarrhea in which human passes his waste more frequently and in liquid form not in solid form. The patients were selected from three different hospitals of Lahore. One hundred and fifty healthy people were selected as their controls. Different types of tests were carried out on samples. Plates were placed in the samples in a condition which lack air completely and the growth of clostridia was found there in form of colonies and different types. There are many types of tests to describe the different types of clostridia.

Results: The outcome of the study was separation of anaerobic bacteria species from thirty-eight patients and forty-eight from healthy people. There were more than 15 types of anaerobic bacteria were separated from both healthy people and the sufferers. The most common separated types of bacteria which live without oxygen are *difficile*, *botulinum* and *perfringens* (also known as *welchii*).

Conclusions: The final results proved that there was not any dissimilarity in the types of bacteria found in the sufferers and the cases of healthy people who were playing the roles of controls. So, it is necessary to carry on other studies in the same field to know about the role of different types of clostridia which are the real cause of frequent passing of body waste in liquid form.

Key Words: *Clostridium*, stool samples, *difficile*, Anaerobic, bacteria, *welchi*

Corresponding author:

Dr. Muhammad Hassan Tahir,
D.G Khan Medical College,
Dera Ghazi Khan,
Pakistan

QR code



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INTRODUCTION:

Our surroundings are full of anaerobic spore forming bacteria species known as clostridia. Many types of these clostridia are found in the stomach and the intestine paths in the human body and it causes many diseases related to intestines such as pain and swelling of colon, inflammation of intestines in human body and passing of human waste very frequently and in liquid form [1]. However, the sufferers who have a background of diseases such as miscarriage, skin diseases, current surgery or cancer of colon are the victim of infection caused by the clostridia. Spore forming anaerobic bacteria divided into five main groups depend upon the diseases they cause to spread. Group one causes gas gangrene. There are many types of clostridia in group one. Tetanus is caused by group II which contains tetani. Botulism is a serious illness caused by the food which is preserved incorrectly and full of bacteria. Botulism is caused by the members of group three. Diarrhea is caused by the members of group four [2]. *Difficile* is a member of group four. Group five causes infection of reproductive system of women, stomach and its relation organs, pneumonia and cerebral collection of pus surrounded by inflamed tissues. Group five contains different species of clostridia. This research was based on the separation of species of clostridia by taking stool samples from the patients of diarrhea and healthy people without diarrhea known as controls. The outcome of both the groups was checked comparatively.

METHODOLOGY:

150 patients of serious diarrhea were selected and three hundred samples were taken from the patients of diarrhea and the healthy people used as their controls for further examination. The samples taken from the other hospitals for testing. The patients were admitted in three different medical hospitals in the city of Lahore located in Pakistan. There was no other critical complication in the patients except serious passing of the waste from the body frequently in liquid form and no treatment of the patients was carried out before taking samples from them.

There were 86 and eighty-seven females from one hundred and fifty patients and one hundred and fifty

controls respectively while the other remaining were males. The criterion for the selection of the sufferers was agony by the loose of the body waste very frequently and they had 3 times stool loose in one day. The sufferers having any treatment before sampling or women having baby in their body or suffering with any other serious disease were separated from the study [3]. There was a set of questions which was asked from the patients as well as controls at the time of sampling. Different type of stool testing was carried out for further investigation. The test plates were dipped into the stool for forty-eight hours at a temperature of thirty-seven centigrade in the absence of air. The dipping of the test plates was increased for more three days if no abnormality was found during test. Gram stain method proved that there were some types of clostridia grown on the stool in the absence of air. Chi square method was the main through which the sufferers and controls were checked.

RESULTS:

This research involved three hundred stool samples of patients suffering of diarrhea and healthy participants. The rate of separated bacteria species and status of the patients are described in table one and graph one. Different types of tests were carried out to identify the different species of anaerobic bacteria. Graph and table two describes thirteen different types of anaerobic bacteria separated from the participant's samples of stools. Most common and least common species of clostridia are visible in them. *Difficile* was found in only point seven percent in the stool samples of patients only. This specie of clostridia was not found in the control participants.

The age of the patients and controls was from one year to eighty years but most of the participants were less than ten years of age. There is a large amount of difference in the separated amount of species of bacteria in males and females as mentioned in table and graph three. Most of the species of anaerobic spore forming bacteria was found in the patients and healthy participants of less than ten year of age.

Table-I: Frequency of isolated Clostridia from stool specimens of the patients and control group.

Samples	No. of cases	Clostridium isolates no	Clostridium isolates %
Patients with diarrhea	150	38	25.3
Control group without diarrhea	150	48	32
Total	300	86	

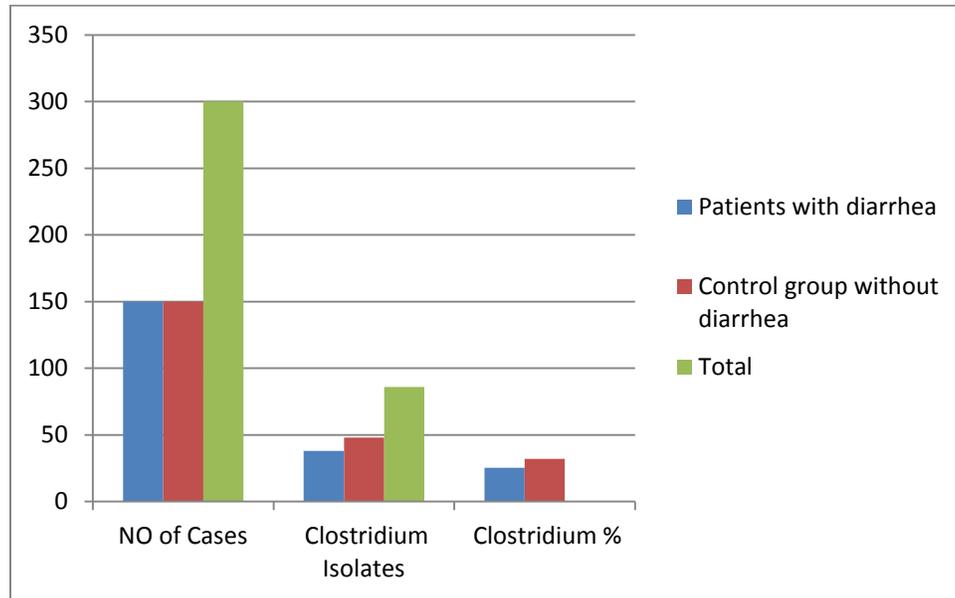


Figure 1 : Frequency of isolated Clostridia Patients Vs Control

Clostridial spp	Patients with diarrhea (No. 150)		Control group (No. 150)	
	No. of isolates (diarrhea)	%	No. of isolates (control group)	%
<i>C. ramosum</i>	9	6	3	2
<i>C. perfringens</i>	5	3.3	12	8
<i>C. subterminale</i>	5	3.3	5	3.3
<i>C. sordellii</i>	4	2.7	10	6.7
<i>C. innocuum</i>	3	2	1	0.7
<i>C. clostridioforme</i>	3	2	7	4.7
<i>C. sphenoides</i>	3	2	0	0
<i>C. histolyticum</i>	1	0.7	1	0.7
<i>C. symbiosium</i>	1	0.7	1	0.7
<i>C. cadaveris</i>	1	0.7	1	0.7
<i>C. hastiforme</i>	1	0.7	1	0.7
<i>C. barattii</i>	1	0.7	1	0.7
<i>C. difficile</i>	1	0.7	0	0
<i>C. sporogenes</i>	0	0	2	1.3
<i>C. limosum</i>	0	0	3	2
Total	38		48	

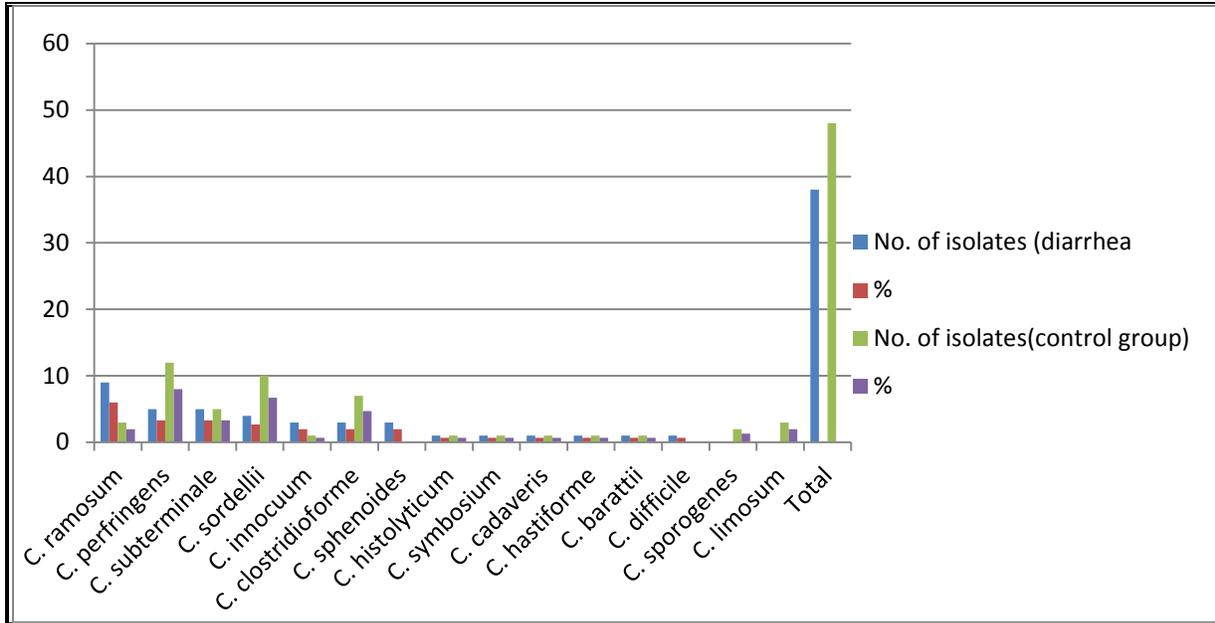
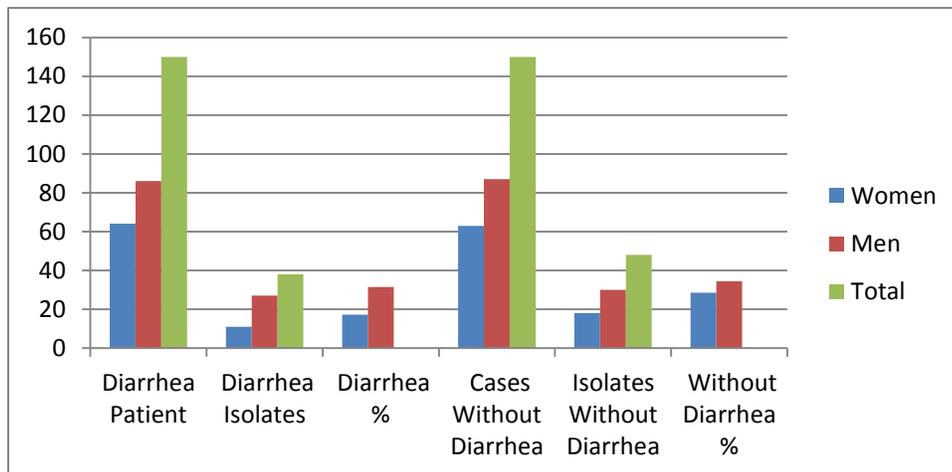


Figure 2 : Distribution of Clostridium with or without Diarrhea

Table-III: Frequency of Clostridial isolates from cases with and without diarrhea based on gender.

Genus	With diarrhea			Without diarrhea		
	diarrhea patient no	diarrhea isolates no	diarrhea %	cases no without diarrhea	isolates no without diarrhea	witout diarrhea %
Women	64	11	17.2	63	18	28.5
Men	86	27	31.4	87	30	34.4
Total	150	38		150	48	



DISCUSSION:

The species of anaerobic spore forming bacteria are found everywhere in the natural environment. They are commonly found in the intestines of different living organisms as well as human being. These bacteria are

normally found in the form of spores [4]. These types of anaerobic bacteria can affect both external and internal tissues. These bacteria are the cause of spreading many diseases. We cannot identify that one type of the anaerobic bacteria is the cause of only one disease [5].

One species of clostridia can bring more than one type of complications. Most of the testing organizations are nit habitual of checking the samples of every patient to get rid of clostridia [6]. So, in this research, we provided the different species of anaerobic bacteria in both healthy participants without diarrhea and patients' suffering of diarrhea and a comparison was made between the species founded of clostridia in those two groups [7].

Thirty-eight different species of anaerobic bacteria were isolated from the sufferers of diarrhea. But these founded species did not provide any difference from the species found in the healthy people [8]. So, it gave the outcome that there are some other factors as genes and age interact with the isolation of these types of clostridia [7]. We found fewer types of species in the patients because of intestine complication. This finding is also proved by some other researches performed in the same field *Ramosum* was the most common specie separated from patients and *perfringens* was most frequent in healthy people in our study [9]. There were many other species lower in number isolated from participants of both groups. But the role of these species in spreading of diseases is important [4]. These species are able to survive in an atmosphere without oxygen and are fatal to life off patients who are habitual of drugs. Point seven percent *difficile* was isolated from the sufferers and it may effect on the physical condition of the patients of diarrhea and it can lead to pain and swelling of intestine or death [10]. The occurrence of *difficile* based upon the physical condition and geological structure of different areas. Graph and table number three gives the information that separation of the species of anaerobic spore forming bacteria in the patients is lower than the healthy participant of the research [11]. Forty-eight isolations were found in the control members and thirty-eight isolations were found in patients of diarrhea. The numbers of isolations in the males were large in number in both groups than the isolations found in females.

CONCLUSIONS:

Clostridia or anaerobic spore forming intestinal bacteria are normally live in the paths after stomach to intestines or involving the both. The separation of these bacteria in healthy people and the patients of diarrhea proved no differentiation. This result was the outcome of many other studies. So, more studies and research works are to be done in this field to know about the clostridia species role in the disease of diarrhea.

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