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THE VALUE OF DIRECT ANTIBIOTIC SENSITIVITY TESTING ON ACUTE DYSENTRY STOOL CULTURES, A NOVEL LABORATORY APPROACH

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ABSTRACT

Acute bacillary dysentery is a common health problem in the tropical countries. The routine method of microscopy culture and sensitivity (MC/S) for specimens sent to the medical microbiology laboratory, takes a minimum of 72hours for provisional diagnosis to be made and in developing countries where there is lack of modern technology for rapid diagnosis. Patients with acutebacillary dysentery suffer for longer period and this could be fatal. The purpose of this study therefore, was to determine the possibility of reducing the time spent on MC/S on stools from patients suffering from acute bacillary dysentery. A direct sensitivity test was carried out on carefully selected portion of blood and mucus stained stool specimens from 100 patients with acute bacillary dysentery sixty of the patients were in- patients in paediatric wards while forty of them were adults from out patients department, whose specimens were collected in the laboratory., fifty of the specimens yielded a heavy pure growth of *Shigellaflexneri type 2,*while the remaining fifty yielded a heavy pure growth of *Shigellaflexneri type3* All the strains were sensitive to gentamici, neomycin and kanamycin, but resistant to ampicillin, erythromycine, chloramphenicol and tetracycline. Al the patients were treated with 500mg/l

of neomycine, mixed with mixed kaolin TD/S/7. Those on admission were discharge after three days, to continue their treatment at home. Direct sensitivity test can speed up treatment for patients with acute bacillary dysentery.
Keywords: Acute dysentery, *Shigellaflexnerri,* stool specimens, direct sensitivity testing.

INTRODUCTION

Shigellae are the causative agents of bacillary dysentery, a disease that has been described since early recorded history, IN the American civil war, over 1,7000,000people suffered from dysentery with 44,000 deaths, World 1 also produce a high incidence of dysentery about 3-7 per 1000, in France and 486per 1000asualties in East Africa, Infectious diarrhoea is a major cause of illness throughout the world leading to high morbidity and mortality rate with loss of time from work and school. Specific laboratory diagnosis is needed before therapy can be started. Stool specimens should be delivered to the laboratory with minimum delay. Conventional laboratory diagnosis of Microscopy, culture and sensitivity (MC/S) takes at least 3 days for a provisional diagnosis to be made and 4-6 days ft make a confirmed diagnosis. This delay becomes critical in cases of acute bacillary dysentery and diarrhoea, when patients need immediate or quick relief and such delays could be fatal due to excessive loss of fluid through diiarrheoa especially in surgical patients. Delay can be avoided by doing direct sensitivity test on carefully selected portion of the stool with mucus and blood stain, from patients with acute bacillary dysentery.

Bacillary dysentery stool is mainly mucus and heavily blood stained and the causative organism is the predominant bacterium colonizing the tract, other organisms having being seriously overwhelmed, thus, the use of direct sensitivity testing becomes relevant at this point of the infection.

MATERIALS AND METHOD

In the case of in-patients specimens were delivered to the laboratory in sterile stool cartons (sterilin),within 5-10 minutes after collection, while out patients samples were collected in the laboratory, specimen collection centre. Or brought to the laboratory after collection with minimum delay. Macroscopiy; Stools were mainly mucus and grossly blood stained. Faecal material was absent.

MICROSCOPY

Wet preparations in normal saline and iodine were made and observed under the microscope to rule out enteroparasites; *Entamoebahistolytical, Gardialambia* and the like, no ova cyst or protozoa was seen. But, numerous red blood cells and pus cells were present in high numbers

CULTURER AND SESITIVITY

A carefully selected portion of mucus and blood stained was plated onto Nutrient agar, MacConkey, deoxycholatecitratear plates and a portion also inoculated into Selenite F broth, antibiotics were placed on the nutrient agar plate and all the cultures were incubated aerobically at 370C over night.

RESULTS

MICROSCOPY The wet preparation showed numerous erythrocytes and leucocytes, no ova Cyst or protozoa was seen ulture plates yielded pure growth of Non Lactose fermenterrs on Maconkey and doexycholate citrate agar plates and were identified is *Shigellaflexneri type 2 and type3 , using* shigella slide agglutination antisera. Method.

TABLE 1 ORGANISMS ISOLATED ACCORDING TO AGE GROUPS.

AGE GROUP	* ORGANISMS		TOTAL
	Flexneri'2 *n (%)*	Flexneri'3 *n (%)*	
1-8 years	30 (66.7)	15 (33.3)	45
9-15 year	30 (54.5)	25 (45.5)	55
Total	60	40	100

Note: P>0.05 – Not Significant

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.515[a]	1	.218		
Continuity Correction[b]	1.052	1	.305		
Likelihood Ratio	1.525	1	.217		
Fisher's Exact Test				.305	.152
N of Valid Cases[b]	100				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 18.00.

b. Computed only for a 2x2 table

DISCUSSIONS

This study presents, the value of direct sensitivity testing in stools of patients with acute dysentery. In acute bacillary dysentery, stool. is mainly mucus and grossly blood stained, since at onset of dysentery, much of the faecal materials have been down- loaded. At this stage there is much ulceration of the intestinal tract, and bowel and much aggregation of blood leading to blood stained mucus ,Therefore, the use of direct antibiotics sensitivity testing becomes of immerse value, since the

routine method of microscopy, culture and sensitivity(MC/S) takes at least 3 days for a provisional diagnosis to be made and about 6 days for a confirmed diagnosis to be established. Delay in diagnosis of illness especially in cases of laboratory diagnosis is worrisome to both the patient and the Physician.. In most cases Physicians are so disturbed about delay that, they come to laboratory furious and may want to know the cause of delay. In this part of the world where modern rapid diagnostiic methods, like use of DNA probe APCR are lacking. This modified method of Quick diagnosis in such acute cases is worthwhile. However, this method can not be applied to all stool samples, as the gross number of normal biotypes present will invalidate the result.

CONCLUSION

We present in this study,, a novel method of diagnosis for dysentery stools that are mainly mucus and blood stained There was no significant difference between the in-patients and out-patients ($P>0.05$) using the Chi-square comparison method.

REFERENCES

1. Oronsaye and Adenuga A(2000)Incidence of gentamicin resistance among pathogenic bacterial isolates in University of Benin teaching hospital, Benin city Nigeria. *Nigerian journal of microbiology* **14(2):**25-29.
2. Cowan S T Steel K J Manual for the identification of the medical bacterial,2nd

edition. (1974)Cambridge University press London,pp. 205-209.

3. Datta N (1994). Drug resistance and R-factors in the bowel of London patients before and after admission to hospital,*British medical journal* 2;'407.
4. Granningrer A S.Flesh, Schneeeiss B Aram L ,Stockenbuber F (1992) Rapid screening for bacteriuria of pregnancy.*Infection***20** : 9-11.
5. Oronsaye FE and Samsang C. (2002) Comparison of direct sensitivity with conventional method of microscopy, culture before sensitivity in urine and swab specimens. Proceedings FASDIB.PP 46-48.
6. Oronsaye F E and Anukam K C (2003). Gram stain and urinary microscopy as an index for bacteriuria, *African journal of nursing and midewifery.vol.* **4:***8-10.*
7. Russel A.D and Chopra I (1999)*Understanding antibacterial action and resistance Ells hor wardLONDONpp.146.*
8. Piddock LJV Dever J M and Wise R. (1989) ross resistance of nalixic acid resistant enterobacteria to the fluoroquinolones and other antimicrobials. *European Journal of Clin. Microbials.***5:**411-415.
9. Obaseiki E E and Oronsaye F E (2005)Novel R-Plasmid mediated resistance to nalidixic acid and the 4-0new quinolone antibacterials *Nigerian Journal of microbiology. (press)*

10. Topley and Wilson principles of bacteriology virology and Immunology Vol.11 ,6th Ed. Vol2eds. Edward Arnolds London pp.40-41. 11
11. Odugbemi,F T and Magbadeje (1986) A study of prevalence
13. study from a Nigerian teaching hospital Lab medical journal **20**:10-12.
``13 Oronsaye F E and Oziegbe E I (2002) *Prevalence of enteropathogenic Escherichia coli in*
15. oenteritis *Lancet1;529.*
urinary tract infection in Nigeria. *Journal of hospital MED.***8**:190-192.
12. Oronsaye F E and Ighedosa S U (2003)Antibiotic resistant among pathogenic bacterial isolates a result of *purely breast fed infants PROCEEDINGS OF FADIB PP. 49-50.*
14. Gross R J (1976) Enterotoxin testing of *Escherichia coli* causing epidemic infantile gastr

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