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RESEARCH ARTICLE

SPONTANEOUS INTESTINAL PERFORATION: AN ATYPICAL PRESENTATION OF THE PATIENT WITH DIARRHEAE—A CASE REPORT.

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Abstract

Five marine sponges were collected from six stations from the Levantine Basin in the vicinity of Alexandria city, Egypt (*Spongia* sp., *Cinachyrella* sp., *Ciocalypta penicillus*, *Axinella verrucosa*, and *Plakortis simplex*). The antibacterial activities against seven pathogenic bacteria; *Aeromonas hydrophila*, *Staphylococcus aureus* ATCC6538, *Pseudomonas aeruginosa* ATCC8739, *Vibrio damsela*, *Bacillus cereus*, *Streptococcus faecalis* and *Escherichia coli*, were done. The results showed that the acetone extract of *Spongia* sp. had a broad spectrum and was the most effective against *A. hydrophila* (AU= 32.1). It was followed by ethanol extract (AU= 25.5). *Ciocalypta penicillus* and *A. verrucosa* showed higher antibacterial activity against *E. coli*, where AUs were 17.4, 17.4 and 16.0 for ethanol, acetone, and methanol extracts, respectively. All extracts treated by trypsin and boiling, completely lost their bioactivities except in some cases, the bioactivities decreased to low levels. The ethanol extract of *C. penicillus* lost about 64.4% of AU against *E. coli*. Also, the methanol extract of *A. verrucosa* lost about 56.4% of AU against *E. coli*. The GC-MS patterns confirmed that several substances could be easily affected by proteases and temperature, such as fatty acids and their derivatives. Steroids (digoxigenin) and terpenoids (β -Carotene betulin, astaxanthin, and rhodopsin) were also estimated to be among these extracts.

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Introduction:-

Spontaneous colon perforations are usually encountered as necrotizing enterocolitis in the neonatal period, but occur rarely in infants and children without pathological conditions [1]. Colon perforation is an abdominal surgical emergency in the pediatric population, but is seldom reported when occurring from non-traumatic causes in children beyond the neonatal age [2]. In addition, it is well known that necrotizing enterocolitis and congenital bowel anomalies contribute to most bowel perforations in neonates [3-6]. Prompt surgical management as timely decision-making is necessary in order to achieve a good progress [1].

Case:-

Our patient was a 6 months old boy who presented to the pediatric emergency department with fever, abdominal distention, vomiting and constipation for 3 days. Laxatives and fleet enema didn't lead to any passage of the stool. He looked ill, dehydrated, tachycardic and lethargic. There was no history of hematemesis or hematochezia and any other constitutional symptoms. He had diarrhea and rhinitis one week ago; at that time he received oral rehydration therapy and discharged home. Previous medical history was unremarkable. Physical examination lead to the findings of abdominal distention and tenderness in all four quadrants. In view of the history, examination, hematological and radiological findings, a provisional diagnosis of bowel perforation was made.

Upon presentation the patient was anemic (Hb=10.6 g/dl), white blood cell count was normal (WBC=12.63*10⁹/L) as well as platelets count (PLT=529*10⁹/L). His stool and urine cultures were clear. A peripheral blood culture showed *Escherichia coli* growth. Abdominal x-ray revealed loaded rectosigmoid area, distension in the bowel loops and unusual gas pattern in the right upper quadrant .

Repeated plain abdominal radiograph demonstrated subdiaphragmatic free intra-abdominal air (Figure 1) . He was operated immediately. Underwent laparotomy and resection of the perforated transverse colon (15 cm), colostomy creation with peritoneal toileting. Grossly the outer surface of the resected part was tan brown with congestion at the site of the perforation and white greenish discoloration of the serosa (Figure 2). Pathological analysis of the specimen revealed findings related to transmural bowel necrosis with acute serositis consistent with perforation. The culture from bowel perforation showed mixed coliforms with no anaerobic growth. The patient received intraoperatively 2 units of packed RBC. He was admitted to PICU for 2 days. After surgery we treated him with bowel rest and decompression using nasogastric tube, total parenteral nutrition, and broad-spectrum antibiotics. He improved clinically; his physical examination and laboratory findings were normal he was free of presentation symptoms, had good appetite, tolerating orally, passing soft stool from the stoma.



Figure 1:- Plain abdominal radiograph shows subdiaphragmatic free air.



Figure 2:- Intraoperative findings.

Patient was readmitted 6 weeks later, underwent colostomy closure and sent home in a stable condition.

Discussion:-

Gastrointestinal perforation is a surgical emergency in pediatric population. The colon is the second most common side of perforation. The causes of perforation in infants is mostly trauma. Mechanical obstruction caused by other pathologies causes perforation as well. Necrotizing enterocolitis is one of the causes of bowel perforation in infants but it was excluded in this case because they were no features suggestive of necrotizing enterocolitis neither there was any gross localized ischemia and absence of signs of symptoms of obstruction. The clinical assessment also excluded the other causes and risk factors of nontraumatic bowel perforation such as prematurity, low birth weight,

lymphoma, NSAIDs use, Ehlers–Danlos syndrome, lymphoma, and infections. Idiopathic colon perforation is rare in children, being more commonly found in the very old or the very young, especially premature infants. Many studies report that bowel perforation is more common in males. Y. J. Chang et al reported that in pediatric non-traumatic colon perforation the mean age of presentation is 2.22 ± 1.87 years and the most common presenting symptom is fever which our patient had before admission. The most common sign is abdominal distension followed by abdominal tenderness which may be the clues of pneumoperitoneum similar to the presentation of this case. Upon the reports the most common site of bowel perforation is ascending colon followed by transverse colon. One of the leading organisms found in peritoneal fluid at laparotomy were *Escherichia coli* in almost half of the patients.

In children and neonates, pneumoperitoneum is nearly always the result of a perforated intra-abdominal viscus. Other causes may include intrathoracic pathology especially in patients with ventilatory assistance which have been excluded in this case.

Although abdominal x-ray is not specific for bowel perforation it is more sensitive in diagnosing bowel perforation (86.3%) comparing to abdominal ultrasound (52.9%). The rarity of bowel perforation in this age group which might delay the diagnosis and leads to serious complications. Clinical signs were found to be extremely difficult to evaluate in the neonate and infants when bowel perforation is suspected thus abdominal x-ray should be performed. The management of idiopathic bowel perforation is surgical intervention by resecting the affected segment which was followed in this case.

Conclusion:-

This case rises the alerts of spontaneous colon perforation to be considered in the differential diagnosis of children younger than 5 years of age with an acute abdomen and previous history of diarrhoea. When previously healthy infants and children manifest a sustained fever with a sudden onset of abdominal distention, keep in your mind that there is a great likelihood of colon perforation.

Conflict of Interests:-

The authors declare that there is no conflict of interests regarding the publication of this paper.

Authors' Contribution:-

All authors participated in the conception and design of this report. They all read and approved the final paper.

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