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Pathology and immunological changes of TYPHOID fever

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Abstract
A total of 150 blood and stool samples maturing between the ages of 10 and 60 were collected and cultured on BHI medium, MacConkey, and XLD. agars were all found to contain Salmonella typhi after biochemical testing for the bacteria. Disconnects of Salmonella typhi and 12 segregates of the pathogen were detected in the stool and blood cultures, respectively. Similarly, seropositive serum samples from patients infected with salmonella tested by ELISA assay to evaluate the concentration of cytokines and immune marks(IL-18,TNF-B,CD8 and CD4). Results showed that acute cases of disease express high level of cytokine and immune marks as compared with chronic and asymptomatic infection

Key word. Immunity, CD Markers, cytokines and salmonella.

Introduction

Salmonella is the most frequent genus in the Enterobacteriaceae family. Bacteria that are Gram-ve facultative anaerobes may thrive in a wide range of habitats and hosts, including humans, animals, as well as food. For example, Salmonella variety Humans and other domesticated or wild species may be infected with Salmonella bacterium (1). It's a common theory that this food-borne illness-causing bacteria is to blame (2). These microscopic organisms are to blame for disorders like enteritis and enteric fever (3,4).

Anywhere from three days to nearly a month ago, the illness first surfaced, and the death rate might be anywhere from (12 percent and 30 percent). While typhoid fever's total impact is reduced, there has been a noticeable increase in the number of cases.

Cytokines grind as the particles of sentinelretort that convey about severalfunctionaloccupations and variation the defending, Lymphocyte cytokines are primarily involved in the host response(5,6). Invigorated lymphocytes are divided into two classes that release cytokines. T helper 1 cytokines, such as IL-12 and IFN-, stimulate the (CMI) response, whereas T helper 2 cytokines, such as IL-8 and IL-18, are concerned about AMI. The two reactions have been discovered to be linked in a viral infection (7,8), and the differences between them tilt toward HIR and discouraged alter CMI, which is essential for infection resistance (9,10).

Materials and Methods

At the emergency clinic, a doctor recorded clinical indications of typhoid tolerance and immediately determined to conduct a Widal test on all 150 patients.

Stool samples were cultured directly on macConky agar ,while blood cultured on blood culture medium then isolated on macConky and XLD agar, then identified by biochemical tests and vitek system.

Serological test
patient blood was drained for each of patients. The serum from the blood tests was centrifuged, and the Widal test and IgG and IgM strips were used to evaluate the typhoid patients' seropositive. levels of cytokines and CD8 and CD4 immunomarkersusing the ELISA methods

Statistical analysis

was exhibited by expending Chi-square ($\chi 2$) examination to control the numerical variations between various collections by consuming **an** application statistical stand for social science (SPSS 19). The opportunity of ($P \leq 0.05$) was restrained to be statistically important.

RESULTS AND DISCUSSION

1-Clinical sings

In a sample of 150"blood and stool samples" from persons with suspected typhoid fever, six disengages 12 isolates of S. Typhi were found. Death and desolation are common consequences of typhoid disease. In Iraq, screenings for typhoid fever were made mandatory. Typhoid fever outbreaks have been researched extensively in these investigations; they discovered that cases spread across a large area inside the league, increasing the danger of water-borne illness (11).according serological test showed only 50 patients (33.33%) were seropositive for salmonella and 30 patient showed chronic infection as well as 20 patient showed acute disease this results as showed by(12)

Serum of all patients with typhoid and those with intense or persistent illness activity contain more elevated level of IL-18, TNF-B, CD2 and CD4 than chronic disease as compared with control groups .
as table (1,2,3 and 4)

Table(1) The Concentration of IL-18

Group	NO.	Serum level of IL-18		
		Mean	low	high
Acute	20	1000	500	1100
chronic	30	700	400	900
Control	20	10	5	11

Table(2) The Concentration of TNF-B

Group	NO.	Serum level of TNF-B		
		Mean	low	high
Acute	20	600	500	800
chronic	30	150	50	200
Control	20	12	5	20

Table(3) The appearance of CD8

Group	NO.	Serum level of CD8		
		Mean	low	high
chronic	30	5	2	9
Acute	20	15	8	19
Control	20	3	1	4

Table(4) The Concentration of CD4

Group	NO.	Serum level of CD4		
		Mean	low	high

Acute	20	30	19	38
chronic	30	15	8	17
Control	20	2	1	4

Chemokines work by connecting with certain cell surface receptors on the body. Inconsistencies within the structure of chemokine receptors account for their extraordinary attraction to a wide variety of ligands[13,14]. Neutrophils and monocytes are reactivated by IL-8 through inspiration as well as induction [15,16]. Neutrophils serve as the initial line of defense rather than fighting a wide variety of germs as they would in an infection condition. Provocative cytokines, including IL-8, IL-10, and IL-12, are released by these cells, which also create irritating oxygen. The release of IL-8 into the lungs is associated with an increase in neutrophil activity [117]. the beginning of I L -1 8 can be expanded. Aside from this, the release of responsive O2-species from granulated cells was found to disrupt the appearance of "I L–18." In patients with severe S.typhi pollution, lung I L - 18 is seen at a lower level of protection, but blood serum and liver examination can be used to identify individuals with moderate disease.C D 4+ and C D 8+ White blood cell reactions associated with the removal of S.typhi are critical for those who have a mild infection to have delicate, slimly focused reactions [20,19]. CD8+ effector cells in the lung began to lose their ability to operate, as seen by a decrease in IF N-B production. The protection of lung microorganisms is as frequently as feasible provided by fragile antigens resulting from the "CD8+ White blood cell reaction." Due to the difficulty in determining whether C D8 was pathogenic or not, our results show that both C D4 and C D8 are up-regulated in the peripheral blood of Coronavirus patients in a state of resistant dysregulation. [21,22] .

Figure (1) show Salmonella typhi culture

References

- 1-Kariuki, S.; Revathi, G.; Kariuki, N.; Kiiru, J.; Hart, C.A. (2006). Characterization of community acquired non-typhoidal Salmonella from bactermia and diarrhoeal infections in children admitted to hospital in Kenya. BMC. Microbiology. 6(101): 1-10.

- 2-Kaseb, A.O.; Chinnakannu, K.; Chen, D.; Menon, M.; Dou, Q.P. (2007). Androgen receptor and E2F-1 targeted thymoquinone therapy for hormone-refractory prostate cancer. Cancer Res. 67: 7782-7788.
- 3-Kayashima, S.; Tsura, S.; Shinomya, N.; Motoyoshi, K.(2005). Effects of macrophage colony stimulating factors on reducing bacteria and survival of mice .Infect.Immune. 74:564-570.
- 4-Khan, M.I.; Fadl, A.A. and Venkitanarayanan, K.S. (2003). Reducing colonization of ***Salmonella enteriditis*** is chicken by targeting outer membrane protein. Journal of Applied Microbiology. 95: 142-145.
- 5-Khather, Z.K. and Shareef, A.M. (2005). Contamination of the parent stock feed with Salmonella in Nineveh Governorate. Iraqi. J.Vet.Sci. 19 (2): 85-95.
- 6-Kilic, A.; Bay Sallar, M.; Salih, B.; Sorkun, K.; Tanyuksel, M. (2005). In vitro antimicrobial activity of propolis against methicillin-resistant ***staphylococcus aureus*** and vancomycin-resistant ***Enterococcus faecium***. Ann. Microbiol. 55: 113-117.
- 6-Tizard, I.R. (1996). An Introduction to Veterinary Immunology. 5th ed. W.B. Sounders Com. Philadelphia, U.S.A.Torpdahl, M.; Sorensen, G.; Lindstedt, B.A. (2007). Tandem repeat analysis for surveillance of human ***Salmonella typhimurium*** infection. Emerg. Infect. Dis. Mar.; 13 (3): 388-95.
- 7-Trent, M.S.; Stead, C.M.; Tran A.X.; and Hankins J.V. (2006). Diversity of endotoxin and its impact on pathogenesis. J. Endotoxin. Res. 12: 205-23.
- 8-Uchiya, K.; Barbieri, M.A.; Funato, K. (1999). A Salmonella virulence protein that inhibits cellular trafficking. EMBO J. 18: 3924-33.
- 9-Van Duijkeren, J.; Wannet, W.J.B.; Houwers, D.J.; Van Pelt, W. (2002). Serotype and phage type distribution of Salmonella Strains Isolated from Human. Cattle. Pigs, and chickens in the Netherlands from 1984-2001. J. Clin. Microb. 40 (11): 3980-3985.
- 10-Vandepitte, L. ; Engbac, K. ; Pito, P. and Hench, C. C. (1991). Basic Laboratory Procedurers in clinical Bacteriology. World Health Organization. Geneva.
- 11-Vargas, M.; Gasc, J.; Casals, N.C.; Schellenberg, D.; Vrassa, H. (2004). Etiology of diarrhea in the children less than five years of age in Tanzania. Am. J. Trop. Med. Hyg. 70 (5): 536-539.
- 12-Vazquez-Torres, A. and Fang, F.C. (2000). Cellular routes of invasion by enteropathogens. Curr. Opin. Microbiol. 3: 54-9.
- 13-Vetvickova , J. (2007). An evaluation of the immunological activities of commercially available B-1, 3-Glucans . JANA . 10 (1) : 216-222 .
- 14-Victoratos, P.; Yiangou, M.; Arramidis, N.; Hadjipetrou, L. (1997). Regulation of cytokine gene expression by adjuvants in vivo. Clin. Exp. Immuno. 109: 569-578.
- 15-Vogal, F.R.; Powll, M.F. (1995). A compendium of vaccise adjuvants and excipients.In: Vaccine Design .The Subunit and Adjuvant Approach.NewYork:PlenumPress.pp: 141-227.
- 16-Wain, J.; House, D.; Baker, S.; Kidgell, C. and Rumina, H. (2005). Vi Antigen Expression in ***Salmonella entericaserovartyphi*** Clinical Isolates from Pakistan. J. Clin. Micro. 43 (3): 1158-1165.
- 17-Waterman, S.R. and Holden, D.W. (2003). Functions and effectors of Salmonella pathogencity island-2 type III secretion system. Cell Microbiol. 5: 501-11.
- 18-Weill, F.X.; Timinouni, M.; Demartin,M.; Polomack, L.; Grimont,P.A. (2006). Multi-drug resistance to ***Salmonella typhimurium*** from human influence .J.Clin.Microbio.44 (3): 701-708.
- 20- Control and Prevention diseases centre (CDC). (2009). Outbreak of Salmonella serotype Saintpaul infections associated with multiple raw produce items –United states 2009. MMWR 2008. 57(340): 929-934.
- 21-Control and Prevention diseases centre (CDC). (2006). Preliminary FoodNet data on the incidence of infection with pathogens transmitted commonly through foof -10 states , United states , 2005. MMWR.2006. 55 (14) : 392-395.

- 22-Eckman ,L. and Kagnoff,M.F. (2001). Cytokines in host defense against Salmonella . Microbes. Infect . 3:1191-1200.