

## Original Research Article

# The Effect of Children with Acute Tonsillitis on the Rate of Sedimentation of Red Blood Cells and the Complete Blood Count Test of Children in the Hawija City, Kirkuk Governorate

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**Abstract:** The current study aimed to know the negative effect of children with acute tonsillitis on CBC values and inflammatory indicators. ESR where the study included 50 children whose ages ranged from 5-10 years. Examples of experiment were divided into two groups 25 children for the first group, who were healthy from the injury. As for the second group, they are 25 children with acute tonsillitis. Al -Razi Laboratory, Al -Rafah and Al -Ahly Hospital Laboratory in Al -Hawija district. The current study's findings demonstrated a noteworthy rise in White Blood Cell (WBC) in children with acute tonsillitis compared to healthy children, while the results of the study in Red Blood Cell (RBC) showed a significant increase in healthy people compared to the affected children, while platelet values and values showed PCV is that there are no moral differences between the injured and the healthy, as the results showed that there is a moral rise in random sugar values and ESR values.

**Keywords:** Tonsils, acute tonsillitis, leukocytes, average sedimentation, platelets.

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## 1-INTRODUCTION

The tonsils are relatively complicated, and two stratified steroids are covered and covered for the formation of 10-30 cavities. These cavities -like cavities penetrate the lymph tissue, and thus increase the space of contact with the antigens. The same cavities consist of a stratifying scouting epithelium and a retinal epithelium of the cavities (also called lymphatic epithelium), which are arranged unevenly. Because the lymphatic epithelium is thin and in certain places lacks basal membranes, foreign antigens can be transferred and immediately made available to lymphocytes, which effectively initiates the immune response. In addition, there are numerous channels within cells that resemble tunnels between epithelial cells. While some surface channels are covered in flat folded cells (M cells), others have direct surface openings. The existence of cavities and cells M is especially crucial for coordinating immune processes because the tonsils lack the lymph network., nasal appendages resemble tissue, but it contains a small number of sinuses, and their surface is covered with a

false vertical vertical epithelium [1]. Tonsillitis is a common condition characterized by lymphoma inside the pharynx, with inflammation associated with the rest of the pharynx (pharyngitis). The tonsils belong to the Valir loop, which is an episode of lymph tissue associated with mucus in the pharynx consisting of the tonsils (known as almonds), tubular almonds (behind the Estakius channel), and linguistic almonds (on the base of the tongue) and the pharynges almonds (fever). The tonsillitis usually indicates the inflammation of the two loosen tonsils, which are sides inside the oral pharynx. They are located inside the capsule between the front arc and the back bow, and it consists of the muscles of the linguistic palate and the pharynx [2]. Also, it is an inflammatory process that affects the tons of tonsils and is usually contagious by nature. Tonsils that are part of an acute infection typically appear at the back of the throat contains the tonsils, which can enlarge there as well as other areas like the two meats and linguistics. Acute tonsillitis patients grow tonsils as a result of various germs or viruses, and tumours may also form

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there. There are certain people who get chronic tonsillitis, or persistent tonsillitis around the tonsils. This condition can lead to tonsil stones. If someone has tonsillitis more than once a year, it is referred to as frequent tonsillitis. Recurrent or persistent tonsil swelling can seriously impair a person's quality of life [3]. A sore throat can have a set of causes, usually viruses that cause colds are responsible for that, and in rare cases, sore throat occurs due to tonsils infection (tonsillitis), and it can be difficult to identify the exact sort of germs causing the infection, as children and teenagers are more susceptible to it. This infection is frequently bacterial or occasionally viral. likely to develop from 600 million adults and children in the world with this pathogenic bacteria, which cause tonsillitis, and more than a hundred million patients with these bacteria develop a skin infection every year. In addition, tonsillitis rate is about 32 per 1000 patients annually [4]. Treatment includes controlling pain and fever, moisturizing the patient, and giving appropriate antibiotics, it is recommended to eradicate the tonsils in cases of frequent or chronic tonsils, this article provides an overview of epidemiology, causes, pathological physiology and assessment of tonsillitis, in addition to current treatment strategies and developments The latter in examination and pain management during the removal of the tonsils [5]. It is very normal for children to have tonsillitis, eradication The tonsils are the most common surgery that is performed for children who have almonds over and over again, when the child is three to ten years old, the tonsils are at their highest levels in promoting immunity, and because of this, the tonsil [6]. Children often have tonsillitis, but children under two years of age are not much infection viruses are more likely to cause tonsillitis in children who are younger than 15 years old, while staph bacteria is more likely to cause tonsillitis in children between the ages of 5 and 15 Numerous studies conducted at the age of five have revealed that 15.9% of school-age children had cluster Staphylococcus group A [7]. Many children get throat and tonsils to the extent that they believe this is just part of their being Children, one study found that about 30 % of people with ulcers around the tonsils need to eradicate the tonsils, According to a different survey, 11.7% of children in Norway and 12.1% of children worldwide had tonsillitis [8]. The primary cause of tonsillitis is GABHS, but other bacterial pathogens that are isolated in these cases include Streptococcus pneumoniae, Hemophilus influenza, and Staphylococcus aureus. Both of these pathogens are aerobic and involved, so if the patient has not received a vaccination, Corynebacterium diphtheriae should be added to the mix for a differentiated diagnosis. HIV, Treponema Pallidum, Neisseria Gonorrhoeae, or Chlamydia Trachomatis are among the sexually transmitted infections that can also cause tonsillitis. In recent times, tonsillitis has been linked to tuberculosis, hence the condition's risk factors [9]. the tonsils' surgical removal There is currently no agreement on the potential effects of these surgical procedures on the immune system, despite the fact that the lymph nodes are two

crucial immune members that are frequently and frequently operated on. The removal of tonsils and glands appears to have no discernible impact on cellular immunity, despite this. Surgery may increase the incidence of pertinent infectious diseases, which may support the surgeon's decision to perform the procedure. Lymph can increase the occurrence of certain diseases, especially infectious diseases, and the removal of the tonsils and lymph nodes does not adversely affect cellular and mixed immunity. In a medical setting [10].

## 2- MATERIAL AND METHODS

### 2-1 Study Community:

The study participants were chosen from children between the ages of 5 and 10 males and females randomly from the residents of the Hawija district in Kirkuk Governorate, who joined the study after conducting a preliminary health examination that proved that they were free of well-known chronic diseases. It has been done the division of the study into two groups, the first group was one of the children who did not infection with the acute tonsils, while the first was one of the children with a sharp tonsil.

### 2-2 Samples Collection:

A fasting blood sample was taken in a vomiting bowl of air that contains a gel -gland stimulant for blood clotting from the Mediterranean vein, with a driver on the tip and pressure on the fingers of 60 samples. The blood was expelled for 10 minutes at a speed of 10,000 rpm to precipitate all the components and separate the serum. Samples are analyzed at the Clinical Chemistry Laboratory at Al -Hawija Hospital. Parts of the samples are frozen at a temperature of -80 ° C to evaluate vitamin D and blood standards later.

### 2-3 Determination of Blood Standards

Full blood samples were examined for a full blood census (CBC) using the Beckman Coulter analysis in five parts. The blood standards included in the full blood census (CBC) were used, which are the census of white blood cells (WBC), hemoglobin parameters (HB), (MCV) and (PCV) in this study. Red blood cell deposit rate was estimated according to the traditional method of measuring the rate of red blood cell sedimentation (ESRGREN [11].

### 2-4. Statistical Analysis

“Statistical analysis was performed using the statistical package of social sciences (SPSS 12.0 for Windows, SPSS Inc. Headquarters, Chicago, USA). Values were expressed as average standard deviation. The T test for independent samples of comparisons between the two groups has been used and the T test for associated samples was used to compare the differences between different time points in each group. The probability value is considered less than 0.05 significant differences”.

### 3- RESULTS

The results were presented in a number and one table that includes (ESR, CBC) its (WBC, RBC, PLT,

PCV) and RBS. It explains Correlation of the immune and blood values of those with lius.

**Table 1: It explains the immune and blood values of those with lius**

Groups/Parameters	Control	Patient
WBC	8.45 ± 0.42 b	33.30±2.36 a
RBC	5.29 ± 0.25 a	4.61±0.53 b
PLT	260.80±30.93 a	279.42±25.88 a
PCV	37.49±2.86 a	36.38 ± 2.36 a
ESR	8.04±3.02 b	24.28±4.65 a
RBS	88.31±8.63 b	93.88±9.05 a

**Table 2: It explains Correlation of the immune and blood values of those with lius**

		Correlations						
		WBC	RBC	PLT	PCV	MCV	ESR	RBS
WBC	Pearson Correlation	1	-.588**	.115	-.207	-.572**	.847**	.156
	Sig. (2-tailed)		.000	.425	.148	.000	.000	.280
	N	50	50	50	50	50	50	50
RBC	Pearson Correlation	-.588**	1	-.022	-.050	.020	-.558**	-.277
	Sig. (2-tailed)	.000		.878	.729	.892	.000	.052
	N	50	50	50	50	50	50	50
PLT	Pearson Correlation	.115	-.022	1	-.091	-.196	.193	.208
	Sig. (2-tailed)	.425	.878		.529	.173	.179	.147
	N	50	50	50	50	50	50	50
PCV	Pearson Correlation	-.207	-.050	-.091	1	.246	-.158	.115
	Sig. (2-tailed)	.148	.729	.529		.086	.274	.428
	N	50	50	50	50	50	50	50
MCV	Pearson Correlation	-.572**	.020	-.196	.246	1	-.485**	-.017
	Sig. (2-tailed)	.000	.892	.173	.086		.000	.909
	N	50	50	50	50	50	50	50
ESR	Pearson Correlation	.847**	-.558**	.193	-.158	-.485**	1	.389**
	Sig. (2-tailed)	.000	.000	.179	.274	.000		.005
	N	50	50	50	50	50	50	50
RBS	Pearson Correlation	.156	-.277	.208	.115	-.017	.389**	1
	Sig. (2-tailed)	.280	.052	.147	.428	.909	.005	
	N	50	50	50	50	50	50	50

\*\* Correlation is significant at the 0.01 level (2-tailed).

### 4- DISCUSSION

The results of previous studies indicated that there is a moral rise ( $P \leq 0.05$ ) at the level of leukocytes (WBC) in the children's group in the point evaluation of the condition of patients with acute tonsillitis, white blood cell analysis (WBC) is used as the important defensive line in any inflammatory process, and (WBC) is a natural response to the human body to fight infection. When you get tonsillitis, [12]. In a study conducted by [13] on the children who are in the hospital and those with sharp terror in the tonsil Infection with the

pathogen, where the blood cells face justice or niche, and therefore the number of egg blood cells remains in an increase as long as there is a pathogen, and this study came in accordance with a study Current. The researchers also attributed the weakness of the immune system associated with not obtaining "enough vitamin D, especially when it comes to preventing tonsillitis from returning. The researchers found that vitamin D has a significant effect on the immune system. It changes natural and acquired immunity and reduces inflammation" [14].

The results of the statistical analysis shown in Table (1) indicated the presence of a moral height ( $P \geq 0.05$ ) in the rate of sedimentation of the ESR blood cells in children with acute t/HR ( $24.28 \pm 4.65$ ) when compared to healthy children MM/HR ( $8.04 \pm 3.02$ ). ESR high signs were described during the febrile seizures of tonsillitis [15]. The results of these previous studies indicated that the criteria ((ESR were significantly high in tonsillitis patients Where the speed of the sedimentation of red blood cells increases (ESR) due to these proteins produced against bacterial infections, which appears in the ESR analysis in the form of an increase in value, in addition to that when the tonsils are inflamed, the activity of the immune cells increases in the affected area, which increases the production of proteins [16]. Red blood compared to the size of the immune cells and these proteins (Kraszewska-Głumba *et al.*, Big in the biochemical and immune indicators, including ESR, among children with tonsillitis and healthy children This may be attributed to several reasons, including the bacterial infection resulting from the group of staphylococcus or virals resulting from the Abstain Bar virus, which could be one of the main causes of tonsillitis - many studies have indicated a high level of ESR in the tonsillitis resulting from Bacterial infection compared to viral [16]. The inflammatory body response: ESR high reflects the inflammatory body response-where cytokines such as IL-6 and TNF-Alpha are secreted during inflammation, which leads to an increase in the speed of precipitation [17]. And age differences: If children at different ages may show different levels of ESR, for example, you may have ESR levels higher due to their most active immune response [18]. The results of the Person's correlation coefficient shown in the schedule also indicated the presence of an obligatory link between ESR and both WBC and RBS and a negative connection with both RBC and MCV at a probability level ( $P \geq 0.01$ ) The results of the statistical analysis shown in Table (1) indicated that there is a moral height ( $P \geq 0.05$ ) at the level of random blood sugar in children with acute tonsillitis MM/HR ( $93.88 \pm 9.05$ ) when compared to healthy children MM/HR ( $88.31 \pm 8.63$ ). The relationship between the inflammatory responses in patients with acute tonsillitis and random sugar levels in the blood is an area of attention due to the potential effect of the immune response on metabolic processes and acute tonsillitis occurs, often due to viral or bacterial infections, which leads to the release of infection-supporting cytokines such as TNF- $\alpha$  and IL-6 [19]. Inflammatory cytokine is insulin resistance, which may lead to high blood glucose levels during acute inflammatory cases [20]. In addition, studies have shown that patients with frequent acute tonsillitis show significant changes in cytokine files, with high levels of signs of infections that are strongly related to the inflammatory response and this indicates that the inflammatory state associated with tonsillitis can contribute to changing glucose metabolism because there is a moral decrease ( $P \geq 0.05$ ) in the number of red blood cells in children with acute tonsillitis ( $4.61 \pm 0.53$  1012

cell/L) when compared to healthy children ( $5.29 \pm 0.25$  1012 cell/L) These results were compatible with [21]. The bone marrow to produce more red blood cells as part of the body's response to the increasing demand to transport oxygen and fight the effect of inflammation [22, 23]. Decrease in the amount of oxygen that reaches the tissues), which causes the body to respond to this deficiency by increasing the production of red blood cells of the bone marrow. The presence of a negative average strength and a statistical significance between the number of red blood cells on the one hand and each of the average sedimentation of red blood cells and the number of white blood cells on the other hand and at a moral level ( $P \geq 0.01$ ) The results of the current study indicated that there are no differences with statistical connotations between the injured and the healthy in the values of bloody winds. Where he found the values of platelet among the Patient ( $279.42 \pm 25.88$ ) As for the healthy children ( $260.80 \pm 30.93$ ).

## 5- CONCLUSION

We conclude from the above that the children of the Hawija district with acute tonsillitis are exposed to other immune diseases as a result of the high values of the average sedimentation of red blood cells, as well as the high numbers of white blood cells, which suggests that these children should be transferred to the stage of tonsils so that they do not shine other diseases or that They have microscopic neighborhoods and viruses

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