

Predictive value of WBC differential on different clinical variables & SCAR formation in Chickenpox (Varicella)

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Abstract:-

This prospective study was executed over a period of 5 year from February 2003 to December 2007 in the central pediatric hospital & 5 primary health care center in Baghdad then in the Tikrit hospital & two private clinic in Tikrit , one handed twenty (120) children with chickenpox were enrolled in this study. By 95% CI Paired Samples Test effect of WBC count on different clinical variables & SCAR formation. The result indicate that Rash usual site was commonest & safest type of milder disease (115 =%96)while Rash unusual site give us pointer to predict the moderate course of disease & it was documented for first time in our study only, Hyper pigmented area can be safest type of discoloration happened in course of disease .Hemorrhagic Rash0.287 gives Predictive indicator for serious type of aggressive picture of chickenpox

القيمة التنبؤية لتفاضل كريات الدم البيض التفصيلي على المتغيرات السريرية المختلفة
وتشكيل الندبة في جُديري الماء (Varicella)

المستخلص :-

هذه الدراسة المتوقعة نُفذت على مدى 5 سنوات من فبراير/شباط 2003 إلى ديسمبر/كانون الأول 2007 في مستشفى الطفل المركزية و 5 مراكز رعاية صحية أساسية في بغداد ثم في مستشفى تكريت و عيادتان خاصة في تكريت، سُجِّل في هذه الدراسة 120 طفل مصابين بجُديري الماء. بواسطة 95% زاوج فترة ثقة العينات أُختبر تأثير كريات الدم البيض التفصيلي على المتغيرات السريرية المختلفة وتشكيل الندبة حيث تُشير النتيجة بأن الموقع العادي الطائش كان نوعاً مشتركاً والأكثر أماناً في صورة المرض الأكثر بساطة (115 =%96) بينما موقع غير عادي طائش يعطينا مؤشراً لتوقع الفصل متوسط الشدة للمرض وهذا وثق للمرة الأولى في دراستنا فقط، المنطقة الداكنة جداً يُمكن أن تكون أكثر الأنواع أماناً من حيث تغير اللون في صورة المرض. بينما نوع الطفح الأنزاف في صورة المرض 0.287 يعطي مؤشراً تنبؤياً للنوع الجدي من الصورة العدوانية لجُديري الماء.

Key words: chickenpox, Varicella

Introduction:-

Chickenpox is common febrile illness in children with incubation period can range from (10-21) days ⁽¹⁾. Vzv usually begins as prodromal stage temperature elevation is usually moderate (100-102 F) but may be high (106 F) ⁽²⁾. Rash stage was the hallmark of infection includes maculopapules, vesicle in various stage of evolution rash in usual site & in UN usual site. The number of Varicella lesions in healthy children may have < 10 to >1500⁽³⁾. Some children had Hypopigmentation or Hyperpigmentation of lesions site which persist for days to weeks, scarring is unusual unless the lesions were secondarily infect by *streptococcus pyogenes* or *staphylococcus aureus* ^(4,5). Leucopenia is typical during first 72 hours followed by a relative normal lymphocytosis. Treated with acyclovir (20 mg /kg/dose; maxim 800mg/dose) given as four doses per day for 5 day ⁽⁶⁾. Varicella is vaccine – preventable disease ⁽⁷⁾. Vaccine is 85-95% effective booster dose may need.⁽⁸⁾

Patients and methods:-

Aim: a) Mean, Stander Deviation, Kolmogorov-Smirnov Z, t-test Significant (2-tailed) & 95% CI Paired Differences of clinical variables. b) t-test Significant (2-tailed) & 95% CI Paired Differences effect of Wbcount on different clinical variables & SCAR formation. C) Frequency & Percent of different clinical variables

Case Definition and Case Finding:- A chickenpox case was defined as an acute maculopapules, vesicle rash in various stage & explanation of Rash which include:- Rash usual site; rash in scalp, face or trunk & then extremities, Rash un usual site; eyelids conjunctivae, cornea. Extensive rash; Varicella rash number are more than 2000 in children with eczema. Hemorrhagic rash base; in immunocompromised patient (leukemia, long-term steroids) are more numerous & take longer to heal than normal child ⁽⁹⁾.

Study place and period:- This prospective study was executed over a period of 5 year starting from February 2003 in the central pediatric teaching hospital -Alaskan & five primary health care centers in Baghdad till

February 2006 then study was continued in the central Tikrit teaching hospital & two private clinic in Tikrit to December 2007.

Data collection and procedures:- Selected Cases of one handed twenty (120) children with chickenpox were enrolling in this study. At initial visit full details of clinical examination was conduct. child's parent were asked to record fine points regarding Moderate fever, High fever, Rash usual, Rash UN usual, Rash extensive, Rash hemorrhagic, Scar Hyperpigmented area, Hypo pigmented area. In two weeks interval patient second and third appointment had been run to complete the questionnaire concerning modernize clinical picture. A different type of support & medication free of charge to encourage compliance & potency provided the patient's families.

Laboratory Procedures: Blood sample were collect at initial visit and at third appointment from the study group WBC COUNT & differential study carried out by MSG computerized fraction in Baghdad and manual WBC chamber in Tikrit. The cases were sub classified into three group Leucopenia lymphocytosis, Leukocytosis, Absolute lymphopinea >500

Statistical analysis:- done using SPSS version 12.0 Computer software. comparison study of different clinical symptom & sign of chickenpox by One-Sample Kolmogorov-Smirnov Test & by 95%CI Paired Samples Test. effect of Wbcount on different clinical variables & SCAR formation were compared by 95%CI Paired Samples Test Frequency & Percent of different clinical variables by Binomial Test ⁽¹⁰⁾.

Results:-

The comparison study of clinical variables were come as superior limit had seen in Hemorrhagic Rash (1.98+- 0.157) while inferior limit had seen in Rash usual site (1.04+- 0.201). although Kolmogorov-Smirnov Z of clinical variables were come as superior limit had been seen in Rash usual site 5.922 while inferior limit had been seen in Hyper pigmented area 3.870. The most t-test Sig2-ta & 95% CI Paired Differences of clinical variables Corlt. were seen in Hyper - Hypo pigmented area 0.207 & (-0.0561/0.256) t(1.268) & other result as shown in table 1-2 & Graph 1-2a,2b.

The most t-test Sig2-ta & 95% CI Paired Differences of clinical variables Corlt. were seen in Rash unusual site with SCAR formation 0.286 & (-0.0283 / 0.0950) t (1.0696) although SCAR formation did occur to lesser degree in Extensive, Hemorrhagic Rash and SCAR formation strongly Correlated with differential WBC & other result as shown in table 3 & Graph 3.

From differential WBC, we can sub classify chickenpox cases into three groups leucopenia lymphocytosis (96), Leukocytosis (21), Absolute lymphopenia >500 (3) as shown in table 5 & Graph 6.

The most t-test Sig2-ta & 95% CI Paired Differences of clinical variables Corlt. were seen in Hyper pigmented area with Leucopenia lymphocytosis 0.008 & (-0.018 / 0.060) t (2.703) although Leucopenia lymphocytosis did occur to

lesser degree in Hypo pigmented area, The most t-test Sig2-ta & 95% CI Paired Differences of clinical variables Corlt. Were seen in Rash unusual site with Leukocytosis 0.0860 & (-0.424 / 0.393) t (3.686) although Leukocytosis did occur to lesser degree in Extensive Rash .The single t-test Sig2-ta & 95% CI Paired Differences of clinical variables Corlt. Was seen in Hemorrhagic Rash with Absolute lymphopenia >500 0.287 & (-0.028/ 0.095) t (1.070) and other result as shown in table 4 & Graph 4, 5. The comparison study of Frequency, Observed Percent of clinical variables Corlt. were come as bigger limit had seen in Rash usual site cases (115 =%96) while lesser limit had seen in Rash usual site Hemorrhagic Rash cases (3= %03) and other result as shown in table 6 & Graph 7--1

TABLE (1): One-Sample Kolmogorov-Smirnov Test

	Wbcount	fever mod	fever high	rashus	rashunus	rashext	rashhemo	hyper	hypo	scar
Mean	1.25	1.22	1.80	1.04	1.83	1.81	1.98	1.48	1.38	1.80
Std. Deviation	.583	.414	.402	.201	.374	.395	.157	.501	.486	.402
Kolmogorov-Smirnov Z	5.103	5.29 2	5.37 6	5.922	5.535	5.417	5.897	3.870	4.434	5.376

Paired Samples different clinical variables Test TABLE-2-

	Paired Differences		t	Sig. (2-tailed)
	95% Confidence Interval of the Difference			
	Lower	Upper		
Fevermod Feverhia	-729	-438	-7.935	8.98
Rashus Rashunu	-882	-701	-17.332	19.460
Rashext Rashhem	-234	-099	-4.879	1.959
Hvoer - hvoo	-056	.256	1.268	.207
Wbcount - SCAR	-722	-378	-6.333	2.559

Paired Samples SCAR formation TestTABLE-3-

	Paired Differences		T	Sig. (2-tailed)
	95% Confidence Interval of the Difference			
	Lower	Upper		
Wbcount - SCAR	-722	-378	-6.333	2.56
Hyper - scar	-410	-240	-7.569	8.785
hypo - scar	-515	-335	-9.379	5.553
rashhemo - Scar	.106	.244	5.024	1.799
Rashus - scar	-836	-681	-19.3	-1.673
Rashunus - scar	-028	.095	1.070	.286
Fevermod - scar	-729	-438	-7.935	1.294

Paired Samples wbcount TestTABLE-4-

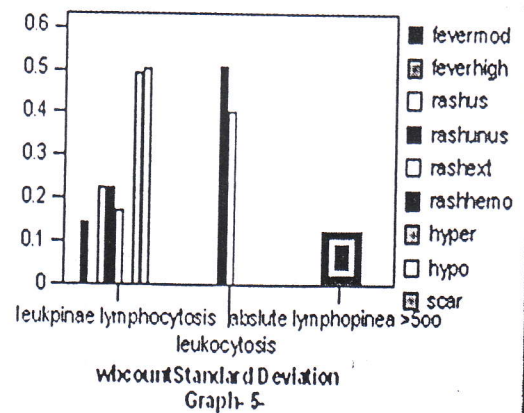
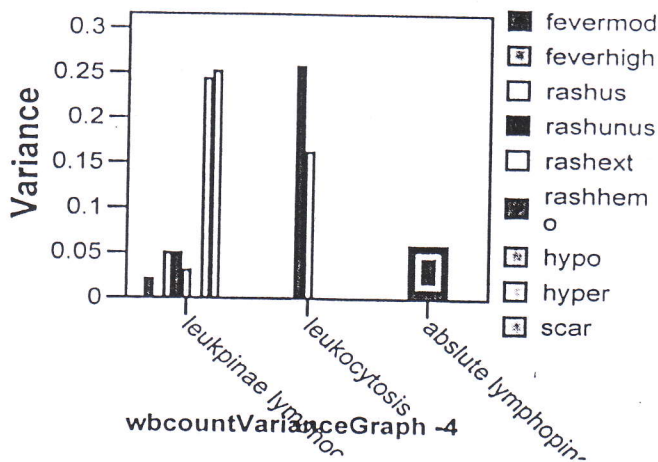
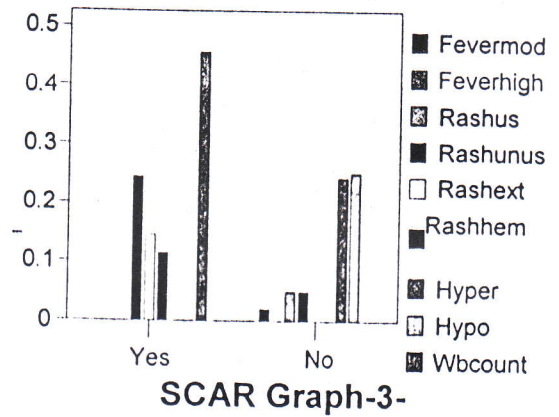
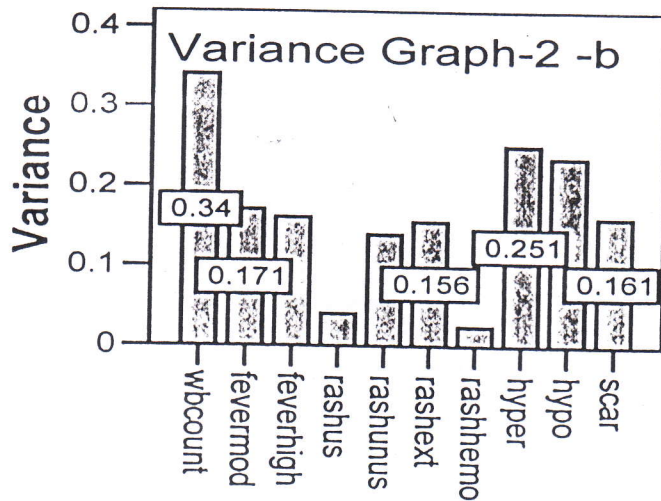
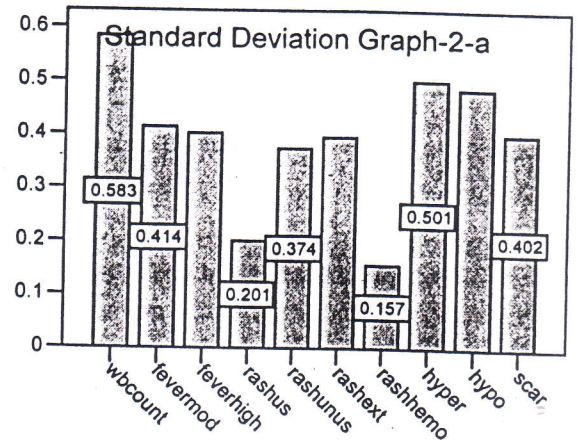
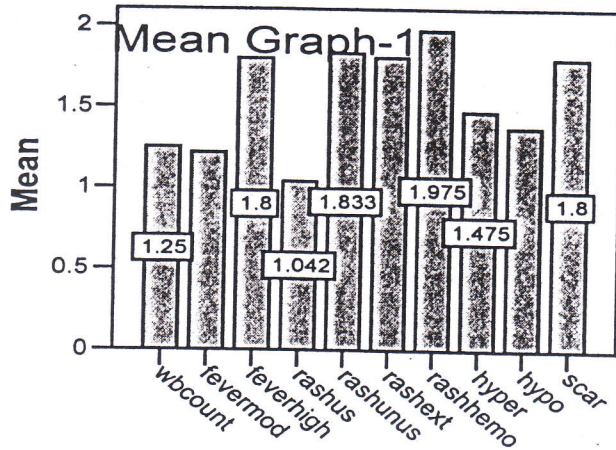
	Paired Differences		T	Sig. (2-tailed)
	95% Confidence Interval of the Difference			
	Lower	Upper		
Wbcount - rashhemo	-.028	.095	1.070	.287
Wbcount - rashext	-.722	-.378	-6.333	4.433
Wbcount - rashunus	-.424	.393	3.688	.0860
Wbcount - hyper	.018	.060	2.703	.008
Wbcount - hypo	-.283	.033	1.565	.120

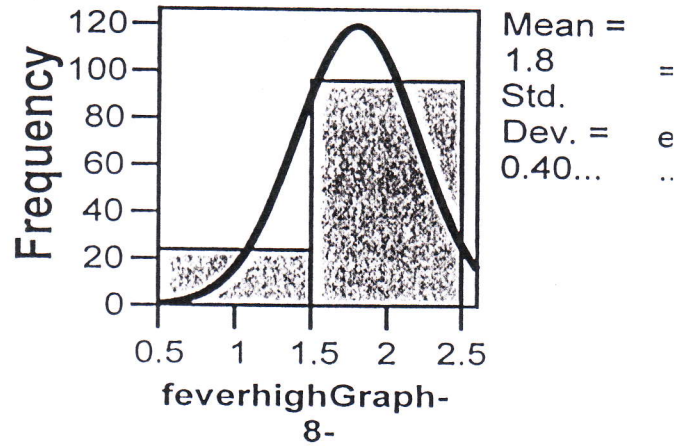
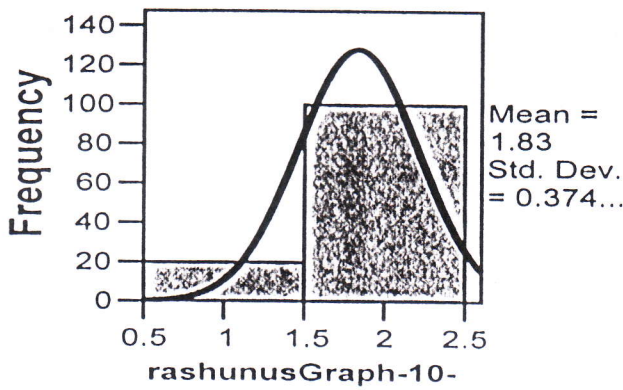
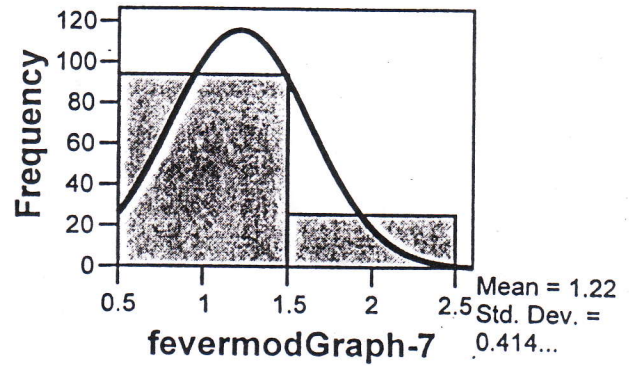
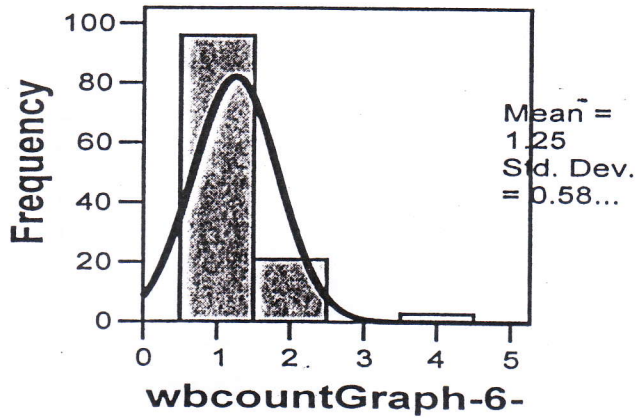
WbcountTABLE-5

	Frequency	Percent
Leucopenia lymphocytosis	96	80.0
Leukocytosis	21	17.5
Absolute Lymphopinea >500	3	2.5

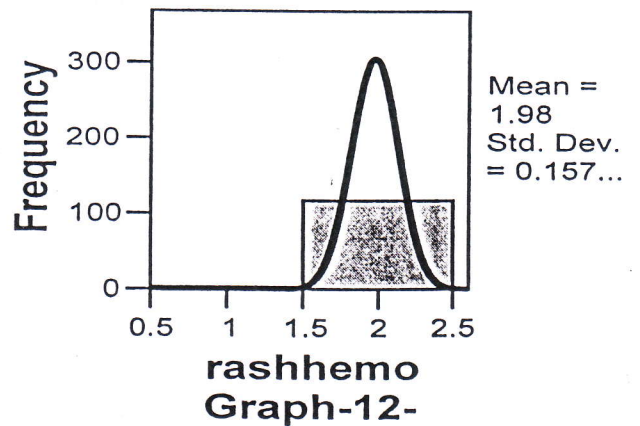
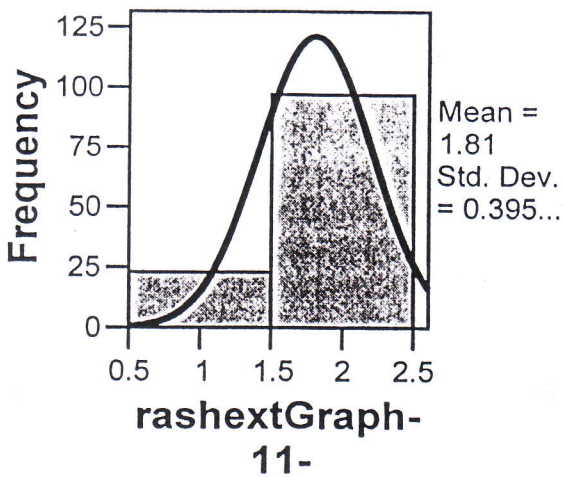
Binomial TestTABLE-6-

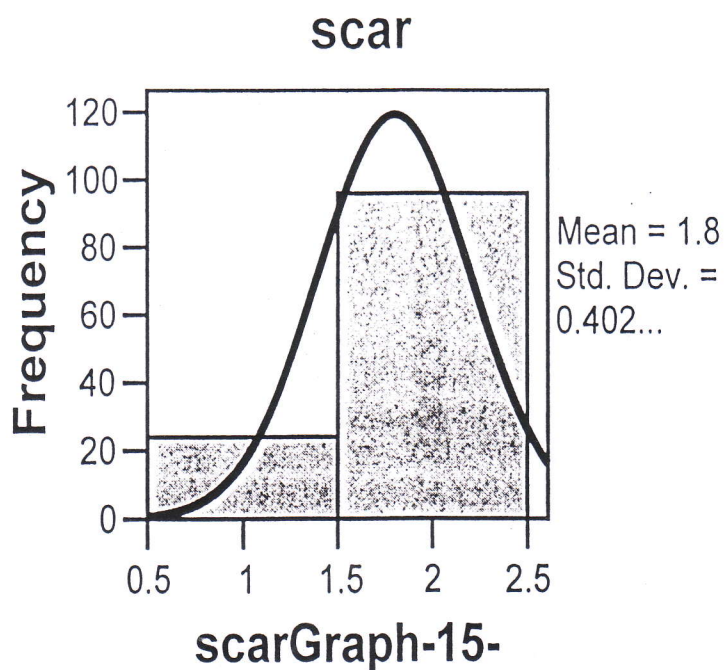
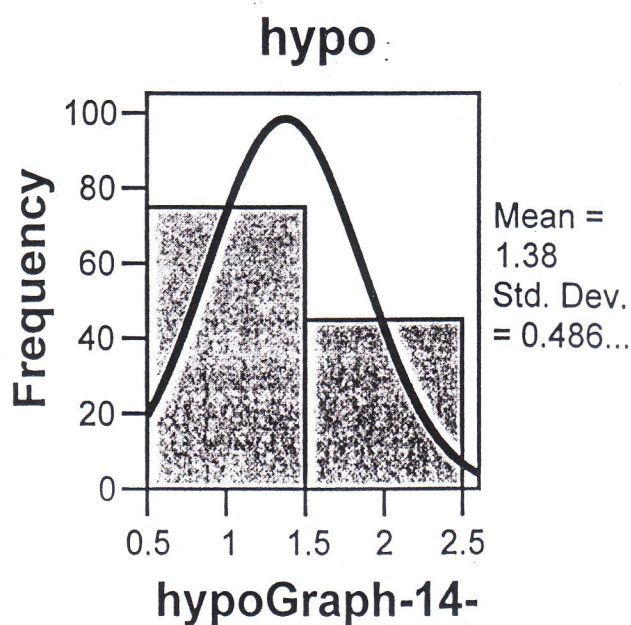
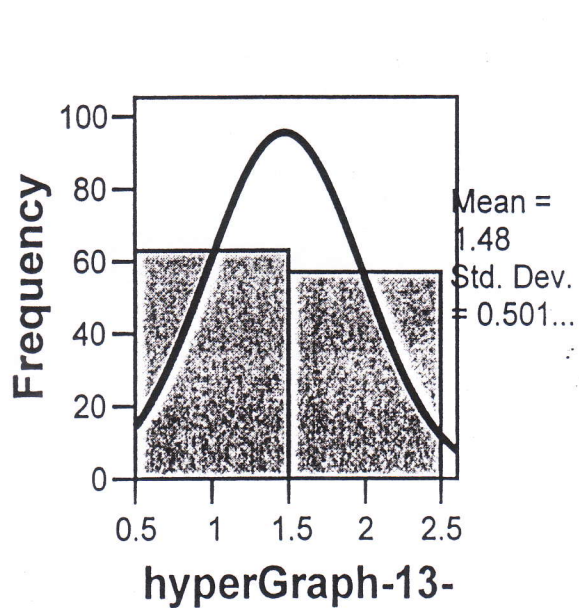
	Category	Frequency	Observed Percent
fever mod	Yes	94	.78
	No	26	.22
fever high	No	96	.80
	Yes	24	.20
rash us	Yes	115	.96
	No	5	.04
rash unu	No	100	.8
	Yes	20	.17
rash ext	No	97	.81
	Yes	23	.19
rash hem	No	117	.98
	Yes	3	.03
hype r	No	57	.48
	Yes	63	.53
hypo	Yes	75	.63
	No	45	.38
scar	No	96	.80
	Yes	24	.20





rash ext





Discussion:-

This study is the first randomized, clinical research in Iraq assessing Predictive value of WBC differential on different clinical variables & SCAR formation in chickenpox. There is no parallel study in medical academic journal in Iraq, Egypt, Kuwait, Jordan, turkey and Syria. In compares to other(UK,USA,GERMANY....) study we notice that highest Frequency of Rash usual site cases (115 =%96) & higher Kolmo-S Z 5.922 with non Sig2-ta Corlt (-1.673) indicate that Rash usual site was commonest & safest type of milder disease & which was consistent with disease severity data described by Junker ⁽¹¹⁾. In spite of less Frequency of Rash un usual site cases (20 =%17) but Sig2-ta Corlt were seen in Rash unusual site with Leukocytosis 0.0860 & SCAR formation 0.286 give us pointer to predict the moderate course of disease which was documented for first time in our study only. Although Sig2-ta Corlt were seeing in Hyper - Hypo pigmented area 0.207 but a Sig2-ta. Correlations were seen in Hyper pigmented area with Leucopenia lymphocytosis 0.008 & absence SCAR formation was signify that Hyper pigmented area can be safest type of discoloration happened in course of disease also was documented for first time in our study only . Even small frequency (three= percentage03) of Hemorrhagic Rash (1.98+-0.157) had Sig2-ta 0.287 Correlations with Absolute lymphopinea >500. This give prognostic indicator for serious type of aggressive picture of chickenpox which in this study were happened in tow cases of acute lymphoblastic leukemia⁽¹²⁾ VZV remains a dangerous pathogen for immunocompromised patients, including children with ALL ⁽¹³⁾ & one case of nephrotic syndrome treated by acyclovir(IV) plus VzV immune globulin in the central pediatric teaching hospital -Alaskan. The subsequent restrictions in our study must be well thought-out, we depend on clinical and

WBC count & differential to sub classify cases of chickenpox infection; unavailable other laboratory confirmed cases in Iraq ⁽¹⁴⁾. Although chickenpox is a distinctive rash illness easily recognized by health care providers and parents, other diseases, rosella, rickettsial diseases, herpes simplex may occasionally be mistaken for chickenpox more investigation is need to evaluate the PPVof The epidemiology of chickenpox and its complications, including further studies of primary care populations ⁽¹⁵⁾.

Conclusions:-

From study of rash usual site, rash un usual site, rash extensive, rash hemorrhagic, Hyperpigmented area, Hypopigmented area & SCAR formation with differential WBC can give sensitive and/or specific an important role in precise diagnosis & natural course of the of chickenpox .

Acknowledgments:- I do thanks the patient's parents for their fulfillment and the personnel of the central pediatric teaching hospital - Alaskan & five primary health care center in Baghdad & central Tikrit teaching hospital in Tikrit .

Abbreviations:- fevermod Moderate fever, fever high fever, rashus Rash usual, rashunus Rash UN usual, rashext Rash extensive, rash hem Rash hemorrhagic, Hyperpigmented area, Hypopigmented area, Wbcount differential WBC, CI confidence interval, Sig2-ta Significant (2-tailed), Corlt *Correlations* .

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