The extra efficiency of (five day {zinc & ascorbic acid} drug) course in compares to (One day vitamin A) course as adjuvant therapy in Measles

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**Abstract**

**Background:** Measles is a serious infection characterized by high fever, an exanthema, cough, coryza, conjunctivitis. Zinc plays a key role in enzymes and is critical to human growth, metabolism, and immune function. Vitamin C is an important antioxidant that may affect the functions of the hematopoietic system (immune response, leukocytes, macrophages, red blood cells). **Aims:** prospectively studied to assess the effect of both treatment groups on Clinical Manifestation (Typical) and (Atypical) of Measles & assess the effect of both treatment groups on clinical course (Typical) and Radiological improvement days.

**Patients and Methods:** Six hundred and less than 15 year present with Measles. In my private clinic & outpatient clinic of pediatrics department in Tikrit teaching Hospital were admitted and collected from October 2006 to December 2010. Sub classified as 400 Child (five day drug) group and 200 Child (One day vitamin A) group were schedule to receive (specific dose twice daily) while vitamin A (Single dose of 200,000 1U orally for Child under 15 year of age /100,000 IU for children 6 mo to 1 yr of age). A chiefly planned questionnaire was used to collect information about the effect of drug on natural clinical course and for more precise data. Sub classified Clinical Manifestation into typical (coryza, koplik spot, conjunctivitis, photophobia, high fever, mild fever, cough, milder maculopapular, severe maculopapular, desquamation) and atypical Manifestation of Measles as (Fever, seizures, delirium, abdominal pain, vomiting, bloody diarrhea, pneumonia, pleural effusions). **Results:** The estimates of Typical AND A Typical Clinical Manifestation were significant lesser degree in (five day drug) { Typical 3.0642 AND A Typical 0.0112} than { Typical 5.172 AND A Typical 0.0233} for (One day vitamin A) & The effect of natural clinical course & on Radiological improvement days (five day drug) group (0.80719, 0.5556) less than in (ONE day) group (1.41022) (1.3913) **CONCLUSIONS:** This study indicates the extra efficiency of (five day {zinc & ascorbic acid} drug) course in compares to (One day vitamin A) course as adjuvant therapy in Measles. The outcome are planned to generate novel hypotheses for clarifying zinc & ascorbic acid as adjuvant therapy in Measles.

**Key words:** Measles, Zinc, Vitamin C

**Introduction**

Measles Outbreaks tend to be relatively explosive and short-lived. Measles is a serious infection characterized by high fever, an exanthema, cough, coryza, conjunctivitis, and a prominent After an incubation period of 8–12 days (1). Koplik’s spots, is the pathognomonic sign of measles and appears 1 to 4 days prior to the onset of the rash. Symptoms increase in intensity for 2–4 days until the 1st day of the rash. The rash begins around the forehead (around the hairline), behind the ears, and on the upper neck as a red maculopapular eruption. The rash fades over about 7 days in the same progression as it evolved, often leaving a fine desquamation of skin in its wake.

Atypical measles (2). Patients had onset of high fever and headache followed by the appearance of a maculopapular rash on the extremities that become petechial and purpuric and progressed in a centripetal direction. The illness was frequently complicated by pneumonia and pleural effusions (3). Zinc as a micronutrient plays a key role at the catalytic sites of a wide range of enzymes and is critical to human growth, metabolism, and immune function (4). The diets of children in many developing countries are often deficient in zinc and a high phytate: zinc ratio in their diet reduces zinc bioavailability (5). The micronutrients, zinc plays a critical role in the development and maintenance of host defenses against infectious diseases (6). Evidence from low-income countries indicates that detrimental effects on host immunity can occur rapidly in children with mild zinc deficiency (7). Results from preventive trials show that zinc supplementation significantly reduces the incidence of pneumonia and chronic diarrhea in children living in areas of endemic zinc deficiency (8).

Large-dose vitamin A supplementation during illness has been shown to reduce mortality the severity of illness and the duration of pneumonia in children with measles (9). Vitamin C is an important antioxidant (electron donor) in the aqueous milieu of the body. Vitamin C enhances non-heme iron absorption, the transfer of iron from transferrin to ferritin, and the formation of tetrahydrofolic acid, and thus may affect the functions of the hematopoietic...
system (immune response, leukocytes, macrophages, red blood cells) [11].

**Aims**
1. Assess the effect of both treatment groups on Clinical Manifestation (Typical) (Atypical) of Measles.
2. Assess the effect of both treatment groups on clinical course (Typical) duration and Radiological improvement days

**Patients and Methods**
Sexhandred Child less than 15 years of age present with Measles. In my private clinic & outpatient clinic of pediatrics department in Tikrit teaching Hospital were admitted and collected from October 2006 to December 2010 be prospectively study to evaluate the extra efficiency of (five day drug) course in compares to (One day vitamin A) daily course therapy in Measles.

**STUDY DISGIN - CASE DEFINITION** according WHO criteria for diagnosis of Measles.

**Drug Dose & Preparartion**
For more than three month before study Depending on drug Gide international review and in addition to advice from specialized pharmacologist UAE (ph.D. EMAD M. ALAZZAWY) with QULIFID private pharmacy I choose three different dose mixture preparation of this new drug according to the age & weight dose A (1mth- 2Y ), dose A1(25mth- 7Y ), dose A2(84mth- beyond 15Y ) given as oral effervescent powders prefer giving with milk twice daily for five day. The recommended dosage oral formulations of vitamin A, administrated as a capsule, is single dose of 200,000 IU orally for children under 15 yr of age /100,000 IU for children 6 mo to 1 yr of age)

**Results**
The Sexhandred Child compares analysis of Typical Clinical Manifestation had proved the following:-the one-sample of (five day drug) group 8.882 Sig. (2-tailed) 3.064 less than in (ONE day) group (9.565) Sig. (2-tailed) 5.172. The average Mean percent of (five day drug) group 8.882 Sig. (2-tailed) 3.064 less than in (ONE day) group (9.565) Sig. (2-tailed) 5.172. The one-sample test & One-Sample Kolmogorov-Smirnov test. The effect of both treatment groups on Atypical Clinical Manifestations was compared by one-sample, Binomial test & One-Sample Kolmogorov-Smirnov test.

**STUDY DISGIN**
Four hundred Child were scheduled to receive (specific dose twice daily) while vitamin A (Single dose of 200,000 IU orally for Child under 15 years of age /100,000 IU for children 6 mo to 1 yr of age)

**Computer software. Baseline individuality was compared one-sample test of Typical Clinical Manifestation (five day drug) group and (One day vitamin A ) group Paired Samples Test confidence intervals (CIs), While Binomial & REGRESSION TEST treatment group together estimated the rates of Typical Clinical Manifestations. The effect of both treatment groups on Atypical Clinical Manifestations was compared by one-sample, Binomial test & One-Sample Kolmogorov-Smirnov test. The effect of both treatment groups on clinical course (Typical) duration and Radiological improvement days were compared one-sample test & One-Sample Kolmogorov-Smirnov test.

**Clinical Manifestation**
Clinical Manifestation into typical as (coryza, koplikSpote, conjunctivitis, photophobia , high fever, mild fever, cough, milder maculopapular , severe maculopapular, desquamation ) and Atypical Manifestation of Measles as (Febrile seizures, delirium, abdominal pain, vomiting, bloody diarrhea, pneumonia, pleural effusions) . the whole time of hospitalization several investigations.

**Laboratory Procedures**
Computerized investigations were done in the laboratory department of Tikrit teaching Hospital which include CBP, LFT, RFT, GUE, GSE & chest x-ray.

**Computerized investigations were done in the laboratory department of Tikrit teaching Hospital for completion & reviewing comprehensive questionnaire concerning update medical picture were received. The study drugs, investigations & different type of support to patient’s families were provided free of charge to promote compliance & appetency.**

**Computer software. Baseline individuality was compared one-sample test of Typical Clinical Manifestation (five day drug) group and (One day vitamin A ) group Paired Samples Test confidence intervals (CIs), While Binomial & REGRESSION TEST treatment group together estimated the rates of Typical Clinical Manifestations. The effect of both treatment groups on Atypical Clinical Manifestations was compared by one-sample, Binomial test & One-Sample Kolmogorov-Smirnov test. The effect of both treatment groups on clinical course (Typical) duration and Radiological improvement days were compared one-sample test & One-Sample Kolmogorov-Smirnov test.**

**Statistical ANALYSIS**
done using SPSS version 12.0
The extra efficiency of (five day [zinc & ascorbic acid] drug) course in compares to (One day vitamin A) course as adjuvant therapy in Measles

Discussion

Because zinc moves through all the fluids in the body, it creates a defense against infection-causing bacteria and viruses trying to enter the body and stops bacterial and viral replication acting a vital function in the improvement and maintenance of host defenses in resistance to infectious diseases. 

This study is the original, randomized, clinical &pharmacologic research in World proves the extra efficiency of (five day [zinc & ascorbic acid] drug) course in compares to (One day vitamin A) course as adjuvant therapy in Measles. Both groups have effect on Typical AND A Typical Clinical Manifestation of Measles but to significant higher degree in (five day drug). The estimates of Typical AND A Typical Clinical Manifestation were significant lesser degree in (five day drug) (Typical 3.0642 AND A Typical 0.0112) than (Typical 5.172 AND A Typical 0.0233) for (One day vitamin A). This can be owing to fact that of Zinc is anti-bacterial, anti-viral and is found in all the body fluids, including the moisture in the eyes, lungs, nose and urine.

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Discussion

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Acknowledgments Thank all the doctors (ph.D. EMAD M. ALAZZAWY) with QULIFID private pharmacy and healthcare workers & Clinical Bacteriology Department in Tikrit teaching Hospital& private laboratories also my gratitude to the children whose collaboration made this study possible.

Paired Samples Test of Clinical Manifestation Table 1-A

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>95% Confidence Interval of the Difference</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five day 400 - One day 200</td>
<td>-5.87</td>
<td>33.91</td>
<td>Lower: -30.15 Upper: 18.37</td>
<td>- .549</td>
</tr>
</tbody>
</table>

Binomial Test of Clinical Manifestation Table 2

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coryza</td>
<td>5 day 400: 91</td>
<td>22.75%</td>
</tr>
<tr>
<td></td>
<td>1 day 200: 95</td>
<td>24.50%</td>
</tr>
<tr>
<td>Koplik's spots</td>
<td>5 day 400: 76</td>
<td>19.00%</td>
</tr>
<tr>
<td></td>
<td>1 day 200: 77</td>
<td>19.28%</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>5 day 400: 73</td>
<td>18.65%</td>
</tr>
<tr>
<td></td>
<td>1 day 200: 89</td>
<td>21.25%</td>
</tr>
<tr>
<td>Photophobia</td>
<td>5 day 400: 69</td>
<td>17.50%</td>
</tr>
<tr>
<td></td>
<td>1 day 200: 86</td>
<td>21.50%</td>
</tr>
<tr>
<td>Hoarseness</td>
<td>5 day 400: 44</td>
<td>11.13%</td>
</tr>
<tr>
<td></td>
<td>1 day 200: 78</td>
<td>19.28%</td>
</tr>
<tr>
<td>Mild fever</td>
<td>5 day 400: 74</td>
<td>18.50%</td>
</tr>
<tr>
<td></td>
<td>1 day 200: 78</td>
<td>19.28%</td>
</tr>
<tr>
<td>Cough</td>
<td>5 day 400: 49</td>
<td>12.31%</td>
</tr>
<tr>
<td></td>
<td>1 day 200: 78</td>
<td>19.28%</td>
</tr>
<tr>
<td>Mild maculopapular desquamation</td>
<td>5 day 400: 98</td>
<td>24.50%</td>
</tr>
<tr>
<td></td>
<td>1 day 200: 43</td>
<td>10.60%</td>
</tr>
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Regression Test Table 3

<table>
<thead>
<tr>
<th>Dependent Mth</th>
<th>Rsq</th>
<th>df</th>
<th>F</th>
<th>Sigf</th>
<th>b0</th>
<th>b1</th>
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<tbody>
<tr>
<td>Five day 400 LINEAR</td>
<td>.333</td>
<td>8</td>
<td>4.00</td>
<td>.081</td>
<td>88.1467</td>
<td>-4.3316</td>
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<tr>
<td>Five day 400 LOGARTMIC</td>
<td>.327</td>
<td>8</td>
<td>3.88</td>
<td>.084</td>
<td>91.0867</td>
<td>-17.719</td>
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<tr>
<td>Five day 400 POWER</td>
<td>.364</td>
<td>8</td>
<td>4.57</td>
<td>.065</td>
<td>97.7231</td>
<td>-.3188</td>
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<td>One day LIN</td>
<td>.247</td>
<td>8</td>
<td>2.63</td>
<td>.144</td>
<td>91.0267</td>
<td>-3.7848</td>
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<tr>
<td>One day LOG</td>
<td>.294</td>
<td>8</td>
<td>3.33</td>
<td>.106</td>
<td>95.9456</td>
<td>-17.038</td>
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<tr>
<td>One day POW</td>
<td>.183</td>
<td>8</td>
<td>1.79</td>
<td>.217</td>
<td>97.6419</td>
<td>-2.679</td>
</tr>
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</table>

Clustered Bar Summaries of Separate Clinical Manifestation-C-
The extra efficiency of (five day [zinc & ascorbic acid] drug) course in compares to (One day vitamin A) course as adjuvant therapy in Measles.
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