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Research Article

**ANALYSIS OF OXIDATIVE STRESS OF 1 TO 5 YEARS OF
CHILDREN SUFFERING FROM JAUNDICE**Dr Iqra Amjad¹, Dr Rabiya Illyas², Dr Shoaib Ahmed³¹BHU 33/12L Chichawatni, Sahiwal²Pakistan Kidney and Liver Institute Research Center, Lahore³Government General Hospital Samnabad Faisalabad**Article Received:** February 2020**Accepted:** March 2020**Published:** April 2020**Abstract:**

Aim of the study: The basic aim of the study is to find the level of antioxidant in children (age 1-5 years) who is suffering from jaundice. **Methodology of the study:** This cross-sectional study was conducted in Jinnah Hospital Lahore during March 2019 to November 2019. All the data was collected with the permission of ethical committee of hospital and with the permission of parents. We collected the data from all those patients who was suffering from jaundice fever. 5cc blood was drawn from vein for the analysis of TAC from blood serum. **Results:** Serum MDA, GSH, GPx, Catalases and SOD concentrations were significantly lower after phototherapy than before it ($p < 0.05$). Conversely, serum TOS, lipid hydroperoxide levels were significantly lower than normal values. There were significantly positive correlations between serum total MDA and GSH. **Conclusion:** jaundice fever in children and serum TAC. The lowest values shows that antioxidants are the important serum biomarker in the prognosis of jaundice.

Corresponding author:

Dr. Iqra Amjad,

BHU 33/12L Chichawatni, Sahiwal

QR code



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INTRODUCTION:

Jaundice is not a disease in itself. The yellow skin and eyes, which are the symptoms of jaundice, point at an underlying condition. They indicate the presence of excessive amounts of bilirubin in the blood. Jaundice is a common occurrence in preterm babies. The liver is still in the developing stage, and the bilirubin does not get flushed out of the body regularly. The level of bilirubin usually goes down in two weeks after birth¹. However, jaundice in toddlers and older children can occur due to several reasons. Finding out the exact cause of the condition is important to be able to treat it. Here is a list of possible underlying conditions that cause jaundice in children. Each of these conditions directly or indirectly affects the levels of bilirubin in the body, causing yellow skin. Phototherapy is the most widely used form of therapy for unconjugated hyperbilirubinemia. Its noninvasive nature, easy availability, low cost and occurrence of few side effects have initially almost led to the assumption that it is innocuous². The possibility that this may not be the case has been raised in several recent publications, which have shown that phototherapy is a photodynamic stress and can induce lipid peroxidation. Increasing appreciation of the causative role of oxidative injury and lipid peroxidation in the development of many severe diseases of the newborn has lent tremendous importance to lipid peroxidation and its possible causes³.

Free radicals and related metabolites have attracted a great deal of attention in recent years. They are mainly derived from oxygen and are generated in the body by various endogenous systems, exposure to different physicochemical conditions or pathophysiological states⁴. Free radicals can adversely alter lipids, proteins and DNA, and have been implicated in pulmonary oxygen injury, intra ventricular hemorrhage, and retinopathy of prematurity, ischemia/reperfusion injury manifested as necrotizing enterocolitis, postischemia central nervous system injury, and acute tubular necrosis⁵. Phototherapy is the most widely used form of therapy for unconjugated hyperbilirubinemia. Its

noninvasive nature, easy availability, low cost and occurrence of few side effects have initially almost led to the assumption that it is innocuous⁶.

Aim of the study

The basic aim of the study is to find the level of antioxidant in children (age 1-5 years) who is suffering from jaundice.

METHODOLOGY OF THE STUDY:

This cross-sectional study was conducted in Jinnah Hospital Lahore during March 2019 to November 2019. All the data was collected with the permission of ethical committee of hospital and with the permission of parents. We collected the data from all those patients who was suffering from jaundice fever. 5cc blood was drawn from vein for the analysis of TAC from blood serum. We find the level of antioxidants, GSH, MDA, CAT and SOD in blood serum. Then all the data were statistically analyzed on SPSS version 17.0. SD, SE and means values of TAC were analyzed.

Analysis of total antioxidant capacity (TAC)

Sample was hydrolyzed 5 times in 0.25 M oxalic acid in boiling water bath, and then dialyzed against phosphate buffered saline (PBS). Protein content of each sample was determined by measurement of the absorption of UV light at 280 nm wavelength and calculated according to a standard curve. Maillard reaction-related fluorescence (FC), representative of AGEs formed and was measured as an index of advanced glycation in 360/450 nm excitation/emission fluorimeter. Quinine sulfate 1 μ M in 0.1N H₂SO₄ was used as a standard. The levels of AGEs were expressed as arbitrary fluorescence units (AU) per mg protein.

RESULTS:

Serum MDA, GSH, GPx, Catalases and SOD concentrations were significantly lower after phototherapy than before it ($p < 0.05$). Conversely, serum TOS, lipid hydroperoxide levels were significantly lower than normal values. There were significantly positive correlations between serum total MDA and GSH.

Table 01: Levene's Test for Equality of Antioxidants

Variables	F	Sig.	t	df	Sig. (2-tailed)	Std. Error Difference
GSH	3.125	.089	-17.589	25	.000	.183414
			-20.466	24.857	.000	.157633
GPx	49.433	.000	7.334	25	.000	.083378
			5.585	9.129	.000	.109480
Catalase	.738	.398	1.532	25	.138	.419087
			1.722	24.802	.098	.373032
SOD	18.971	.000	-2.073	25	.049	.262729
			-2.664	18.165	.016	.204399
MDA	4.147	.052	1.590	25	.124	.480996
			1.811	24.983	.082	.764706

DISCUSSION:

Oxidative stress can be defined as increased formation of reactive oxygen species or decreased antioxidant defense mechanism⁷. Newborn's antioxidant resistance framework could be inadequate and it makes the connection between harm because of oxidative stress and new conceived pathologies more essential⁸. Untimely newborn children are at sure hazard from oxidative stress on the grounds that both endogenous and exogenous antioxidant barrier frameworks don't quicken in development until late in the third trimester⁹. Oxidative stress is a contributing element for tissue damage through the development of free radicals and responsive oxygen species (ROS) and receptive nitrogen species (RNS) prompting provocative cytokines which result in untimely birth.

Increased levels of anti-oxidants and decreased activities of catalases can be correlated to enhanced lipid peroxidation and subsequent neoplastic transformation. Antioxidant enzymes which catalyze the conversion of reactive oxygen species to water include catalase (CAT), manganese containing superoxide dismutase (Mn-SOD) and copper and zinc containing superoxide dismutase, a mitochondrial enzyme that plays a key role in protecting the cell from oxidative damage¹⁰.

CONCLUSION:

It is concluded that there is a positive correlation between jaundice fever in children and serum TAC. The lowest values show that antioxidants are the important serum biomarker in the prognosis of jaundice.

REFERENCES:

1. Gathwala G, Sharma S. Oxidative stress, phototherapy and the neonate. *Indian J Pediatr.* 2000;67:805-8.
2. Devasagayam TP, Tilak JC, Boloor KK, Sane KS, Ghaskadbi SS, Lele RD. Free radicals and antioxidants in human health: current status and future prospects. *J Assoc Physicians India.* 2004;52:794-804.
3. Warner BB, Wispe JR. Free radical-mediated diseases in pediatrics. *Semin Perinatol.* 1992;16:47-57.
4. Halliwell B. Free radicals, antioxidants, and human disease: curiosity, cause, or consequence. *Lancet.* 1994;344:721-4.
5. Stocker R, Ames BN. Potential role of conjugated bilirubin and copper in the metabolism of lipid peroxides in bile. *Proc Natl Acad Sci USA.* 1987;84:8130-4.
6. Stocker R, Glazer AN, Ames BN. Antioxidant activity of albuminbound bilirubin. *Proc Natl Acad Sci USA.* 1987;84:5918-22.
7. Newman TB, Maisels MJ. Evaluation and treatment of jaundice in the term newborn: a kinder, gentler approach. *Pediatrics.* 1992;89(5 Pt 1):809-18.
8. Ramzan HS, Malik A (2013) Role of Advanced Glycation End Products (Ages) and Oxidative Stress in the Failure of Dental Implants. *Dentistry* 4:179. doi:10.4172/2161-1122.1000179
9. Freeman BA and JD Crapo. Biology of disease: free radicals and tissue injury. *Lab Invest* 1982; 47:412-426.
10. Pressman EK, Thornburg LL, Glantz JC, et al. Inflammatory cytokines and antioxidants in midtrimester amniotic fluid: correlation with pregnancy outcome. *Am J ObstetGynecol* 2011; 204:155.e1-7.