International Journal of Medical and Health Research
ISSN: 2454-9142, Impact Factor: RJIF 5.54
www.medicalsciencejournal.com
Volume 2; Issue 12; December 2016; Page No. 09-12

Endogenous intoxication level, contain fatty acids and their relationship in children with chronic osteomyelitis of the jaws

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Abstract
38 children with chronic osteomyelitis of the jaws were observed during 2008-2015. It was detected that in patients with chronic osteomyelitis of the jaws were observed reduction of MD content till 112%, on background of reduction of CA till 21,1% (P>0,001) and was increased of correlation MDA/CA 10 times. At that content of MAM_{254} and MAM_{280} was correspondingly composed of 179,16% and 100% as well as coefficient resistance of protein 75,9% (P<0,001) from index of control group. It was detected that between content of MDA and fatty acids in sick children's blood with chronic osteomyelitis of the jaws were observed higher correlation but with saturated fatty acids were average one. Catalase activity is highly correlated both with saturated and unsaturated fatty acids.

Keywords: osteomyelitis of the jaws, endogenous intoxication, fatty acids, correlation

Introduction

Actuality

Last years the rate of inflammatory processes of maxillofacial area in children steadily grows, and more often mark progressing forms of course [1, 5]. At that osteomyelitis of the jaws are composed of 1,41 cases on 1000 population including complicated phlegmon- 1,01 cases on 1000 population [1, 5]. Basic directions for contributing on decision of given problem are working out and realization of clinical practice of new more effective methods of diagnostics, prognostication of osteomyelitis of the jaws. But prognostication of odontogenic osteomyelitis and its various complications on clinic-laboratory findings are not practically realized. In 65, 7-74, 3% patients chronic osteomyelitis of the jaws last from 6 months till some years and provide continual treatment including with repeated performance of surgical operations [1, 5, 7].

Complex method of study the pathogenesis, diagnostics and treatment as well as prognostication of given problem in modern stage is required to study the roles of content of fatty acids in the blood directly taking part in the process of peroxide oxidation of lipids (POL) consequence which is endogenous intoxication.

Aim

Aim of the work is to study interconnection of endogenous intoxication findings with content of fatty acids in children with chronic osteomyelitis of the jaws.

Materials and Methods of research

38 children between the ages of 2-15 with chronic osteomyelitis of the jaws being in-patient treatment in the department maxillofacial surgery of RMMC in Samarkand city and 15 healthy children with analogous age were examined in the periods of 2008 - 2015. Gasochromatographycal analysis of fatty acids from blood serum were carried out on method described by Muhammadiyva N.K. and Ibadova Sh.M. [6]. In plasma of venous blood were determined endogenous intoxication markers-MAM_{254}, MAM_{280}, malon dialdehydes (MDA), activity of catalase ferment (CA) [8]. It was counted coefficient of MDA/CA and MAM_{254}, MAM_{280}- coefficient of protein resistance (CPR). Statistic manipulation of given numeral findings were carried out with the use of Student criteria on Excel 2010, correlation coefficient was counted with the methods of minimal square on P= 0,95.

Results and their discussion

From the table1is seen that content of secondary production POL-MDA was increased on 112% on background of activity catalase reduction on 21,1%, correlation of MDA/CA was increased 10 times that points to significant activity of free radical oxidation.

Table 1: Significance of endogenous intoxication findings and contents of fatty acids in sick children with osteomyelitis.

Parameters	Unit	Groups	
		Control	Experimental
Parameters of endogenous intoxication			
MDA	mcmole/l	3,50±0,23	7,45± 0,74*
Catalase	mccat/(sec·l)	0,90±0,06	0,19± 0,02*
MAM_{254}	unit	0,24±0,03	0,67± 0,04*
MAM_{280}	unit	0,28±0,03	0,56± 0,05*
CPR	unit	1,16±0,07	0,84±0,07*
MDA / Catalase	Mcmole·sec/ mccat	3,89±0,16	39,21±1,38*
Content of fatty acids			
C(16:0) Palmitic	%	28,48±2,02	32,16±2,84
C(16:1)Palmiticolienic	%	6,74±0,44	8,93±0,74*
C(18:0) Stearic	%	2,32±0,16	2,65±0,17
C(18:1) Olienic	%	18,63±1,32	15,93±0,78*
C(18:2) Linoleic	%	35,64±2,46	33,83±2,11
C(18:3) Linolenic	%	0,62±0,04	0,60±0,06
C(20:4)Arachidonic	%	2,86±0,16	2,16±0,18
Others	%	2,98±0,12	3,74±0,51*
∑ unsaturated fatty acids		69,49±2,54	61,45±2,34*

In the blood plasma accumulated MAM: content of MAM_{254} is increased on 179.16% but MAM_{280} on 100% concerning norm. (P,0.001). With that coefficient of protein resistance was composed 75.9% from finding of control group (P,0.001). Received findings indicate about development of endogenous intoxication manifested activization of free radical oxidation and accumulation of hydrophilic markers of endotoxicosis-MAM. From table 1 is seen that in the blood of sick children content of palmitic (from 28.48 ±2.02 till 32.16± 2.84) and stearic acids (from 2.32 ±0.16 till 2.65± 0.44) reliably increase while content of oleic acid reliably reduce (from 18.63 ±1.32 till 15.93± 0.78). It may be accounted for peroxide oxidation of double connection containing in the molecules of fatty acids.

Reliable reduction of summary contents of unsaturated fatty acids concerning findings of control group is confirmed in the observation. With the object of detection the role of fatty acids particularly unsaturated in the formation of endotoxins we studied the correlative connection between parameters of endogenous intoxication and content of fatty acids in the blood of sick children with osteomyelitis of the jaws. Received results in the forms of histogram is adduced in figures 1-4.

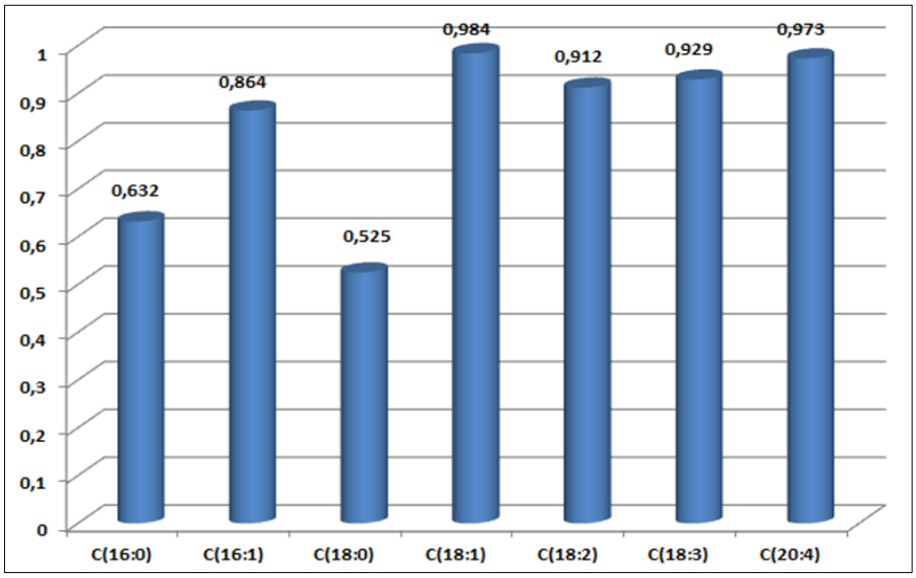

Fig 1: Correlative connection between content of MDA and fatty acids.

As seen from adducted results (fig.1.) between content of MDA and fatty acids in the blood of sick children with phlegmons of MFA are observed high correlation specifically with C(16:1)-0.864, C (18:1)-0.984, C (18:3)-0.929 and C(20:4)-0.973, and average correlation with (C(16:0)-0.632, C (18:0)-0.525, C (18:2)-0.612.

In contrast to MDA catalase activity is highly correlated like with saturated and unsaturated fatty acids: C(16:0)-0.852, C (18:1)-0.984, C (16:1)-0.956 and C(18:0)-0.784, C(18:1)-0.989, C (18:2)-0.985, C (18:3)-0.962 and C(20:4)- 0.952 (fig.2.).

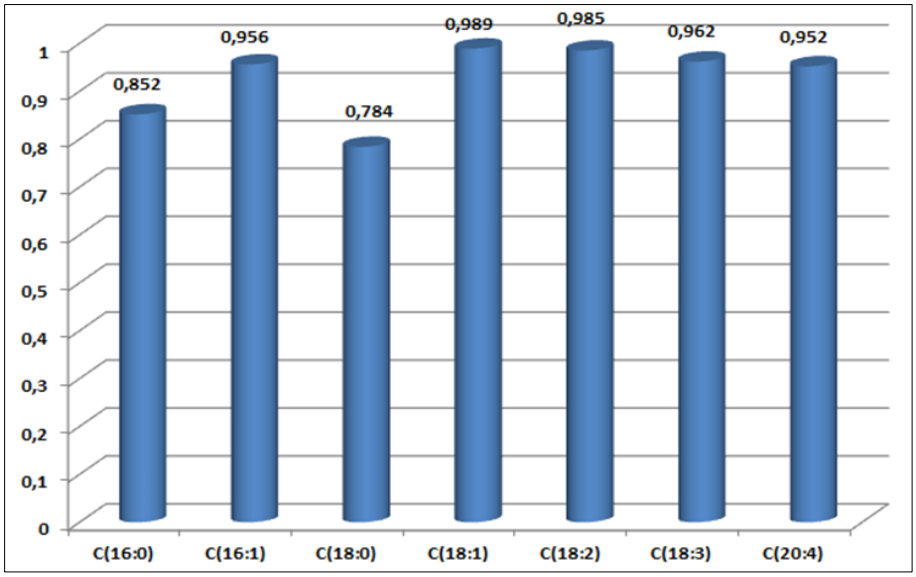

Fig 2: Correlation of catalase activity with content of fatty acids.

It is known that low molecular peptides accumulate in the results of appearance of free radicals which form in the process of acceleration of peroxide oxidation of lipids. For confirmation of this we revealed high and average correlation between MAM_{254}, MAM_{280} and content of unsaturated fatty acids (fig.3-4.).

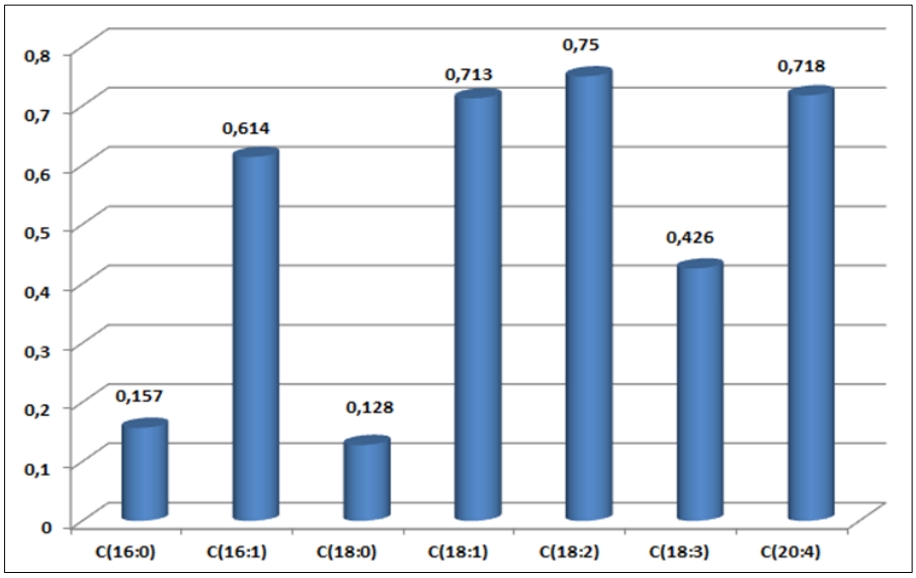

Fig 3: Correlative connection between content of MAM_{254} and fatty acids.

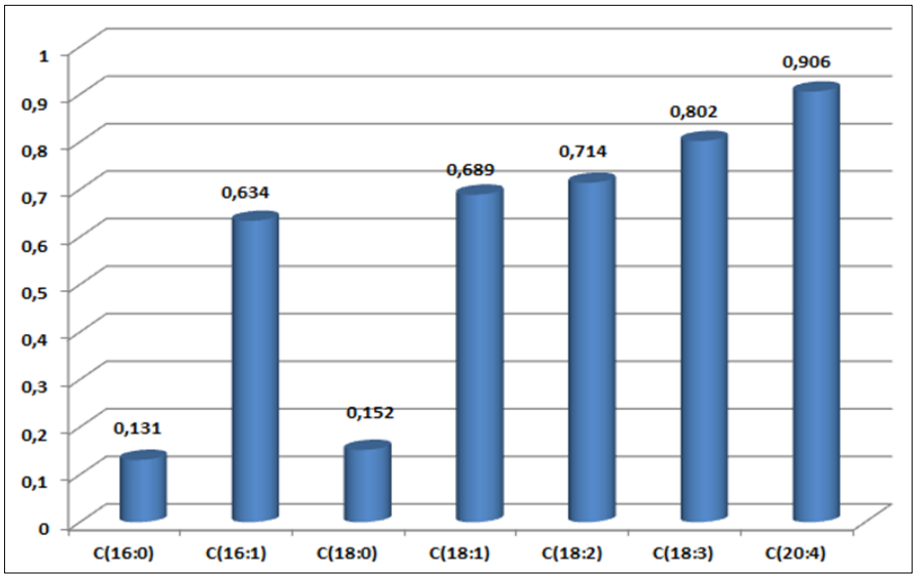

Fig 4: Correlative connection between content of MAM_{280} and fatty acids.

Findings are confirmed once again that in purulent-inflammatory processes of MFA, especially in osteomyelitis of the jaws arising in the result of microbial semination, takes place activization process of peroxide oxidation of lipids.

Establishing facts dictate the importance of therapeutical measure elaborations, main attention is to give to the normalization of disturbed processes of POL and organism detoxication.

Conclusions

1) It is established that in patients with chronic osteomyelitis of the jaws observed increase of MDA content till 112% on background reduction of CA till 21.1% and increase of MDA/CA correlation 10 times. Content of MAM_{254} and MAM_{280} was correspondingly increased and composed of 179,16% and 100% as well as coefficient protein resistance 75,9% from index of control group.
2) They are established high correlative connections between parameters of endogenous intoxication and content of unsaturated fatty acids.
3) Established high correlative connection is basis for carrying out of measures on normalization of disturbed processes of POL and organism detoxication on treatment of osteomyelitis of the jaws in children.

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