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Evaluation of serum levels of zinc in the cases of peptic ulcers in Najaf governorate

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Abstract: The peptic ulcer pathogenesis is multifactorial as well as increases from imponderables between attacker agents as well as protective. This paper pursued toestimate thepotential protective function of the serum zinc concentration in patients with peptic ulcer illness and announces anyrelation between *H. pylori* inflammation and serum zinc concentration **.**Sixty sequentially patients with principalities observation for peptic ulcer illness were implicated. All experienced entire clinical estimation laboratory investigations, upper gastrointestinal endoscopy. The blood level from the zinc has been calculated for every one patient in addendum to for both females and males and for ages between 18-85 years. We found a minimum zinc level in patient blood who were significantly projected in compared to healthy control (P = 0.0003).On the another side, no considerable variation was uncovered in the serum zinc levels between *H. pylori negative* and positive patients (P>0.05). Zinc may take a protective function versus gastric additionally duodenal mucosal membrane damage.

Keywords: Serum zinc, Peptic, ulcer, Evaluation, Najaf, governorate.

Introduction

Peptic ulcer is the most common group of gastrointestinal (GI) disorders indicated by the existence of ulcers in any GI tract portion exposed to acid in sufficient duration and concentration.[1]**.**The gastric mucosa may be deteriorating in situations of zinc shortage. Furthermore, clinical researches have appeared the zinc anti-ulcer behavior in humans. Preceding researches uncovered that zinc effects as the fundamental element in the digestive system physiology, acceleration the wound healing operation for different kinds of tissues inclusive gastric ulcer in experimental animals and in humans [2-4]. Zinc may be beneficial together in accidental therapy due to its multilateral behavior and in anodynetherapy simplifying destroyed tissue renovation.

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Zinc is a element for around 300 enzymes that enclose true cell metabolism[5].In humans the zinc induction study of intestinal metal lotion is more tricky. It is notsimple to obtain sanitary people totolerate gastroscopic biopsy for the science sake. However, some illnesses cases have beenelaborated where gastrointestinal tissue analyses is essential and metal lotion in has been seem at. In Wilson's illness, for epitome, copper is not secreted adequately and finally becomes poisonous. Zinc treatment has been utilized to prevent the copper uptake [6]. Zinc shortage may influence on the intercellular. The gastro-intestinal epithelial cells with junctional complexes structure devastating membrane barrier function as well as impartiality. This leads to grow in neutrophil cumulation and begins a chemokines positive regulation that take an essential function in neutrophil

immigration and inflammatory evolution[7].This work pursued at estimating the potential protective serum zinc function in peptic ulcer illness patients and too to advertise any relation between H. pylori inflammation and serum zinc level. *Helicobacter pylori* inflammation, bile salts, alcohol, pepsin and acid can change the mucosal defense by permitting back hydrogen ions prevalence as well as following epithelial cell damage Theprotective mechanisms contain narrowintercellular junctions, epithelialrenewal, mucus, cellular restitution, and mucosalblood flow[8].A powerful relationship has been famous between adiversified spectrum of gastric adenocarcinoma, MALT lymphoma and gastric non Hodgkin lymphoma, gastrointestinal diseases, and H. pylori [9].

Result and Discussion

This potential project was proceeded on sixty sequentially patients with peptic ulcer disease symptoms revealing. Theirmiddle age was 42.75±15.64 years and inclusivity 39 males (65%) as well as 21 females (35%).The clinical offerings of studied patients were epigastric pain (56%), regurgitation (100%), heart burn (22%), dyspepsia (16%) and vomiting (22%) .

The middle studied patients serum zinc level was 0.00016± .00005 ppm). which was extremely considerable lowered in comparing to sanitary controls (0.00008±0.00001 ppm) (P=0.0003) As signal there was statistically considerable variation for that the results found in that the ratio of Zinc in gastric ulcers carriers persons was extremely than that of sanitary H. Pylori negative & H. Pylori Positive In people influenced by this illness is a gastric ulcer there were no statistically considerable variation for the zinc (p=0.6) H.

Table 1: Comparisons of trace elements between PUD and control groups

parameters	Patients	Controls	p-value
Zn (PPM)	0.00016± .00005	0.00008±0.00001	0.0003

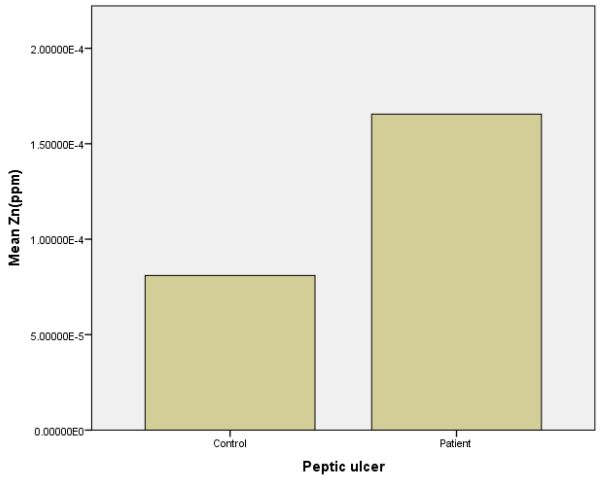

Figure 1: concentration Zn for PUD patients and controls

Table 2: Comparison of Characteristics in two groups

parameters	Patients n=60	Controls n=28	p-value
male	39(65%)	12(42.9%)	٠.06
Age, year Mean ± SD	42.75±15.64	44.39±15.014	0.6
Urban	25(41.7%)	19(64.3%)	٠.038
Smoker	36(60%)	14(50%)	٠.378
BMI (kg/m2) Mean ± SD	22.64±3.603	23.82±3.42	0.1
Hypertensive	21 (35%)	13 (46.4 %)	0.3
H. pylori	25(41.7(%	14(50%)	0.5

Table 3: Comparative statistics of serum zinc levels between H. pylori positive versus negative infections

parameters	H. Pylori +ve	H. Pylori -ve	p-value	Sig
Zn (PPM)	.00017±.000060	. 00016±.000049	0.6	NS

*NS: No considerable variation

In the present study, wepursued to estimate the potentialcoveringfunction of serum zinc in patients with peptic ulcer illness as well as also to advertise any relation between *H. pylori* inflammation as well as serum zinc level.

Zinc participates a function in the steward protection mechanism with preserving the function as well as structure of the membrane barrier that is particularly essential in the gastro-intestinal tract, which is constantlyuncovered to pathogens plenty as well as detrimental factors[10].In the present study, there was a considerable lowering in serum zinc level correspond with the survey of*H. pylori* inflammation is a famousreason of gastritis, peptic ulcer as well as even gastric cancer. The relationship between positive endoscopic findings as well as *H. pylori* inflammation was obvious inpreceding studies. However, in our paper, there was no considerable variance between negative inflammation and endoscopic findings in esophagus and *H. pylori* positive, duodenum and stomach (P>0.05) too , there was no considerable variance between existence of gastro esophageal reflux illness (GERD) in relationship to *H. pylori* inflammation (P>0.05). This was in agreement with[11].(Chung *et al.,2011)* who proposed that *H. pylori* positive patients were minimal likely to have GERD. preceding epidemiological researches explained a negative association between GERDand *H.pylori* inflammation as well as its complexities. This protective influence could be demonstrated by the inclination of *H. pylori* infection to minimize gastric acid excretion with progressing age[12,13]. (Lee*et al*., 2016; Hiyama*et al*., 2008). In the present study, a extremelyconsiderable lowering for serum zinc levels was appeared in various gastric endoscopic returns paralleled to controls (P<0.01). In addendum, a considerable stepwise decrease was appeared in serum zinc levels as the seriousness of gastric mucosal damage enhances. This was approval with the study of[14] achieved a study on 45 patients with gastric 52 with gastritis ,44 with peptic ulcer, and 64 sanitary controls [14].They found that serum zinc level was considerable decreasing in gastritis patients than in healthy group and more significantly minimizing in those with gastric cancer and peptic ulcer harmonize with you. Zinc's main characteristic over the chelating factors is it sex terselyminimum toxicity level. Through zinc treatment, mild gastrointestinal

discomfort is the main appeared side influence and may be based on the zinc salt utilized. The gluconate and acetate salts are conveyed to be best to related inconditions of gastric agitation [15].

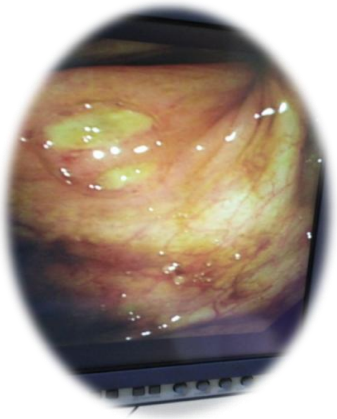

Figure 2: Zinc-induced gastric chronic *ulceration*

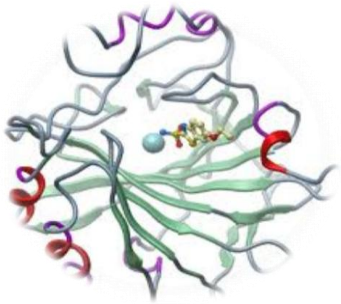

Figure 3: Diagram of human carbonic anhydrase, with Zn atom visible inthe center

Conclusion

In conclusion, found no considerable variance was appeared in serum zinc level as regard *H. pylori* inflammation. However, zinc may take a protective function versus gastric as well as duodenal mucosal membrane damage. Serum zinc severance level of 87μmol/L could duodenal endoscopic findings and prophesies positive gastric [16].

Experimental section

This potential project was proceeded on sixty sequentially patients with peptic ulcer disease symptoms revealing such as heartburn, dyspepsia and epigastria pain, who were nominees for upper gastrointestinal endoscopy. They are offered to the Tropical Medicine department and Internal Medicine at Al-Sadr Teaching Hospital, in Najaf Governorate-Iraq for the interval from December 2018 to March 2019. Patients who extradited zinc supplementationnon-steroidal anti-inflammatory drugs (NSAIDs), proton pump inhibitors (PPI), those offered withmelena or hematemesis and those withchronic liver disease, renal failure, previous gastric surgery, ormalabsorption were eliminated. written approval was gained from every patient before to enrollment. The project protocol was confirmed by the Research Ethics Committee at the Sciences Faculty,Kufa University. Commonalty of the inclusive patients undergoes:

(1) Habitual laboratory investigations:
PT, CBC and INR; in addendum to liver profile (serum AST & ALT) as well as kidney role experiment (creatinine& serum urea)
(2) A integral clinical valuation
(3) Calculating the zinc level in the blood:
Zinc serum was estimated for everyone patients wrapped in addendum to both sexes and all ages were paralleled to sanitary utilizing atomic absorption
(4) Upper gastrointestinal endoscopy: Comprehensive checking of the stomach duodenum, and esophagus was done to everyone patients

Principle of the method:

Direct colorimetric experiment without thespecimen deproteinization in a buffered media, At pH 8.6, zinc interacts with the particular complex ant 5-Br-PAPSforms a stabilized colored complex. The intensity of color is proportionate to the zinc quantity existing in the specimen ordinary serum zinc level range is 84-159 μmol/L.

Reagents

Table 4: Reagents that utilize in the procedure

R1	Buffer	Prefect pH 8.6 (0.2 mol/L)
R2	Colour	5-Br-PAPS (1.1mmol /L)
R3	Reducing	Ascorbic acid (powder)
Acid zinc cal		Zinc stock standard 200 mg/dL

Procedure

1. Reagents were permitted to attain to the temperature working before utilizing. A proportionate difference of the volumes of reaction specified does not alter the outcome.
2. Assay terms:
1. Cuvette: light path1 cm
2. Temperature: 25ºC / 30ºC / 37ºC
3. Wavelength:.560 nm (550-580)
4. Pipette into a cuvette (Note 3):
5. Regulate the device to zero with deionized water.

$$\frac{(A2-A1)Sample-(A2-A1)Blank}{(A2-A1)Standard-(A2-A1)Blank} \times 200\ (\text{Standard conc.}) = \mu g/dL\ \text{zinc in the sample}$$

Statistical Analysis

Information were composed, coded, revised, and came in the Statistical bargain for (IBM SPSS) Social Science version 25. Kolmogorov-Smirnov experiment as ordinary statistical allocation was utilized to check the allocation kinds of the variables outcomes. The outcomes were token as (mean ± standard deviation). Pooled t-test has been utilized for the comparing between the control groups and patients and amongpartition groups in the calculated parameters. The difference between groups is considered as significantly various when $p<0.05$. All statistical analyses were done utilizing SPSS Statistics Version 25 (2017) by IBM-USA. All statistical analyses were done utilizing SPSS Statistics Version 25 (2017) by IBM-USA Thedependability period was set to 95% and the error brink accepted was set to 5%. So, the P-value was believed as: $P > 0.05$: Non considerable, $P < 0.05$: considerable as well as $P < 0.01$: extremely considerable.

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