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## ANALYSIS OF DISTURBANCES IN SECONDARY HAEMOSTASIS IN PATIENTS WITH TICK BITE

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**Актуальность.** Tick bites are common in various regions of Africa and Europe and serve as the main mode of transmission for tick-borne pathogen. Tick's saliva is composed of variety of bioactive molecules which possess anti-haemostatic and anti-inflammatory properties. These features of the constituent bioactive molecules are believed to facilitate the transmission of tick-borne pathogens.

**Цель.** to determine the disturbances in secondary coagulation caused after tick bites ( the changes in secondary haemostasis (Coagulation by Extrinsic & Intrinsic Pathways) in patients with tick bite)

**Методы исследования.** We conducted a retrospective analysis of 419 medical cases of patients discharged from the Grodno Regional Infectious Diseases Hospital with a definitive diagnosis of infectious lesion of the central nervous system caused by tick bite between years 2012 through 2020 to assess the Prevalence of Disturbances in Secondary Hemostasis in patients with tick bite.

Statistical analysis was carried out using the "Statistics" package, v.10 and the Excel program.

**Результаты и их обсуждение.** After thoroughly analysing all the cases, we excluded 32 patients on aforementioned basis, thereby leaving us with 387 cases to include in this study. Tick identification was not done but based on epidemiological data it was found that ticks belonged either to the species Ixodes Ricinus (59.1%) or

*Dermacentor reticulatus* (40.9%) [16]. The mean age of these 387 patients was 50.3 years (range 18 – 79). 258 patients (~67%) were male and 129 patients (~33%) were females.

The patients that showed abnormal values of PT, a PTT or both were taken into account. Extrinsic pathway – 267 patients (69%), had abnormal Prothrombin Time (PT). A prolongation in PT was noticed with a mean time of 19.25 seconds (95% CI: 17.678 – 20.830) was noted and a standard deviation of +/- 5.427 seconds (11-15 seconds normal range). Maximum time noted was 29.8 seconds and minimum time being 15.2 seconds.

Intrinsic pathway (Table 2) – 143 patients (37%), had abnormal activated Partial Thromboplastin Time (aPTT). A prolongation in aPTT was noticed with a mean time of 46.012 seconds (95% CI: 44.866 – 47.157) and a standard deviation of +/- 2.775 seconds (25-40 seconds normal range). Maximum time noted was 54.1 seconds and minimum time being 41 seconds.

Extrinsic and Intrinsic Pathway both – 138 patients (35%) had abnormal value of both PT and aPTT. No data about common pathway, TT (Thrombin Time) was available in the cases, therefore these findings were not included in this study.

**ВЫВОДЫ.** To conclude, tick bites can cause disturbances in Secondary Homeostasis as shown in our study. There were significant statistical evidences to support the hypothesis. Our findings were consistent with previously reported in-vitro anti-Hemostatic effects of tick salivary proteins. The concentration of tick saliva at which anti-hemostatic effects are produced were not measured in our study and requires further investigation. In our study we exclusively focused only on the disturbances of coagulation cascade. Although our study was not focused on the anti-platelet, anti-inflammatory, and/or immunomodulatory properties of the tick's saliva due to lack of data and requires further investigation.

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## EFFECTS OF MELATONIN ON BONE: A CASE-CONTROL STUDY

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**Актуальность.** There is a stereotypical notion of Estrogen being the most relevant parameter for bone health in post-menopausal females, but apart from estrogen, advances in research have presented ample evidence that Melatonin may also play a critical role in bone health outcomes.

**Цель.** Our study established a positive Pearson Correlation between levels of serum Melatonin and its direct effect on Bones in a population of postmenopausal females.

**Методы исследования.** Our study consisted of 48 post-menopausal females, 24 subjects in the case group and 24 in control groups, to study the differences of certain parameters existing between the two. Serum Melatonin was calculated using ELISA test and Bone Mineral Density (BMD) was evaluated using a portable Ultrasound Bone Densitometer Testing Machine.

**Результаты и их обсуждение.** A Positive Pearson correlation exists between BMD and serum melatonin levels.

Linear regression for control group is  $y = 8.078x + 21.48$  with  $(r^2) 0.92$ .

Linear regression for osteopenic group is  $y = 5.991x + 32.0141$  with  $(r^2) 0.90$ .

**Выводы.** The results of our study exhibited strong interdependence between the Melatonin levels and their effects on BMD. Osteopenic subjects who had a lower BMD were also found to have relatively lesser levels of serum melatonin. Aligning with the results, similarly control group with normal BMD was found to have relatively higher level of serum melatonin.