

*Research Article***To Evaluate the Complete Blood Count of Patients Admitted in Intensive Care Unit (ICU) at Tertiary Centre*****Shadma Siddiqui, ** Pinki Vishwakarma**

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Article information**ABSTRACT****Volume: 1****Issue: 1****Page No: 56-63****Received: 17.07.2024****Accepted: 22.7.2024****Published: 26.09.2024****DOI No.:****Corresponding Author:**

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This research details the serious detrimental impacts of fragrances, aromatic chemicals, and cosmetics majorly associated with environmental and human health integrity. Despite being socially relevant and personal hygiene items, most of them comprise numerous synthetic substances, allergies, and endocrine disruptors that are highly hazardous to human health. Based on the in-depth analysis and review of studies showing the physical impact of volatile organic compounds and artificial fragrances with an association with respiratory problems, skin irritation, and hormonal imbalances, it also discusses mechanisms by which adverse health effects are caused, including sensitization pathways and long-term effects of cumulative exposure. In addition to health implications, this study also analyzes the effects of cosmetic products on the environment and the contribution that such cosmetic products make towards environmental pollution. The decomposition of microplastics and chemical run-off by cosmetics poses an important risk to aquatic life, biodiversity, and the quality of soil. The study thus attempts to clear up any risks that could be attached to ordinary cosmetic practices through information obtained both from toxicological evaluation and impact assessment studies on the environment. It highlights strong regulatory structures and the necessity for consumer awareness of such products' safety. Findings underpin both the urgent need to create and inspire a safer environment for cosmetics and promote greater holistic responsibility towards health and the environment.

INTRODUCTION

Intensive care unit are specialist hospital wards. They provide intensive care treatment and monitoring for people in a critically or unstable condition. Intensive care unit are also sometimes known as critical care units or intensive therapy departments.¹

The complete blood count is one of the most commonly ordered blood test. The complete blood count is the circulation of the cellular (formed elements) components of blood. These calculations are generally determined by special machines that analyse the different components of blood in less than a minute. Major portion of the complete blood count is the measure of the white blood cells, red blood cells and platelets. The normal values generally included are the following-

All CBC parameters with normal range included to normal range in standard unit.

A total 100 healthy volunteers (56 males, 44 females) were evaluated for calculating the normal ranges for various Complete blood count parameters. They were all adult patients with an age range of 22-72 years, the normality of distribution was studied for all parameters by using the Shapiro-Wilk test and a significant P value of less than 0.05 was applied. Where ever the P value was below the significant level that

parameter was considered to have a skewed distribution. For normally distributed parameters population data were described using mean, SD and range as mean \pm 2SD, whereas for skewed distribution parameters population was defined by median, IQR and range as 2.5-97.5 percentile. As shown in the non-parametric Mann—Whitney U test was applied to all parameters to check for any significant differences between male and female subgroups. The null hypothesis was that the distribution of data is same for males and females. If P value was found to be less than 0.05 the null hypothesis was rejected indicating a significant difference between male and females. The separate ranges for male and female subgroups for the relevant Studies that evaluated cardiac surgery or critically ill obstetrical patients were excluded from this analysis given that sedation practices, ventilation strategies, and ICU throughput are generally different in these patient populations (15). Studies available only in abstract form or not published in English were also excluded. Citations were screened independently by two reviewers for potentially relevant studies. These were rescreened in duplicate in full-text form if the titles and abstracts indicated that they fulfilled the inclusion criteria.

Intensive care medicine has taken part this year in the ongoing controversy about sedation strategies for the critically ill. Shehabi et al.(1) replicated the ANZ SPICE study design in 11 Malaysian ICUs to assess whether early sedation depth was independently associated with delayed extubation and increased mortality. They performed a prospective multicentre study that included 259 medical/ surgical patients

ETHICS AND LEGAL SECTION

In the past year, published a number of important articles in the ethics and legal section that have addressed a diverse group of topics including the long term effect of intensive care on patients and their families, the perspective of patients and of clinicians on end of life care in the Intensive care unit, the factors that contribute to physician and institutional variability in end of life care in the Intensive care unit, the incidence of potential missed organ donors in the Intensive care unit and emergency department, and the ethics and practice of research in the Intensive care unit settings.

LONG TERM EFFECT OF INTENSIVE CARE ON PATIENTS AND THEIR FAMILIES

An important yet understudied area of intensive care is the influence of the intensive care unit environment on patients and family outcomes. Jongerden et al. (55) performed a study examining patient and

family satisfaction with care before and after the Intensive care unit was moved from a multiple bed per room older Intensive care unit to a new ICU with single rooms. This study was a combination of quantitative and qualitative methods to explore the determinants of family satisfaction. They enrolled 215 family members representing a response rate of 28% and found overall fairly high satisfaction (78.3 on a scale from 0 to 100) with no patient or family factors associated with higher satisfaction. Blood samples were also obtained for determination of plasma inflammatory mediators (nitrate, nitrite, (TNF,IL-4, IL-6, IL-10).

ETHICS AND PRACTICE OF RESEARCH IN THE ICU SETTING

There has been increasing research in the last few years into the ethics and practice of clinical research in the ICU setting. Given the challenges and importance of research in the critical care setting, this is a key area of focus. In this context, Gilon and colleagues investigated the impact of a study's invasiveness on the choice of who should provide consent and the approach to informed consent. At ICU discharge, patients and family members were randomized to receive a vignette of a non-invasive or an invasive study and each vignette included questions about both a conscious and an unconscious patient. They

enrolled 185 patients, and 125 family members, with response rates of 40 and 65%, respectively.

METHODOLOGICAL ISSUES

Two articles addressed the quality of statistical reporting in critical care journals. Latronico et al. evaluated the methodological quality of RCTs published in Intensive Care Medicine from 2001 to 2010 and compared it to a previous review of RCTs from 1975 to 2000. They found that the quality of reporting of RCTs published partly improved over time and that spin and delta bias were often present. Spin bias refers to reporting strategies to distract the reader from statistically non-significant results, whereas delta bias refers to the inflation between predicted and observed treatment effect. Stronger adherence to the Consolidated Standard of Reporting Trials (CONSORT) recommendations, with special emphasis on accurate description of randomization and blindness, and correct reporting of statistically non-significant results are warranted. Another article by Vesin et al. assessed the quality of reporting and handling missing values in clinical studies. They concluded that missing data was common in the ICU literature and that it can generate interpretation bias. They also provided guidance on the management of clinical study analysis in case of missing data. Awissi et al. performed a systematic

review of the literature to assess the prevalence, risk factors, screening tools, prophylactic and treatment strategies, and outcome of alcohol withdrawal syndrome and delirium tremens in the critically ill. They found that reported alcohol withdrawal syndrome rates range from less than 1% in general ICU patients to 60% in highly selected alcohol-dependent ICU patients. Treatment of alcohol withdrawal syndrome was associated with higher ICU complication rates and resources utilization.

HEMATOLOGICAL ISSUES IN THE CRITICALLY ILLNESS

Thrombocytopenia is a frequent finding in the critically ill. Platelets play an essential role in the complex interaction between inflammation and coagulation. Three studies provided new insights on this topic with potential implications for patient management. In a very interesting prospective multicentre study, Thiollere et al. evaluated 301 patients with either absolute (platelet count $<100 \times 10^9/L$) or relative (decrease in the platelet count $>30\%$) thrombocytopenia.

Blood counts of various types have been used for clinical purpose since the 19th century. Automated equipment to carry out complete blood counts was developed in the 1950s and 1960s.¹⁴

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In a prospective, observational, multicentre cohort study, investigators of the ANZICS clinical Trials Group assessed the relationship between clinical practice and national guidelines for the transfusion of red blood cells (RBCs), Fresh frozen plasma (FFP), platelets and cryoprecipitate in Australian and New Zealand ICUs. The proportions of transfusion not adherent to guidelines were 2% for FFP and 88% for cryoprecipitate.

To evolution in organ dysfunction between haematologic malignancy patients with and without bacterial infection, Vandijck et al. performed a retrospective analysis in haematologic malignancy patients admitted to their ICUs between 2000 and 2006.

The October issue of Intensive Care Medicine published an interesting article on critical care management of patients with haemophagocytic lymphohistocytes (HLH). A retrospective search from 1998 to 2009 on this life threatening condition associated with multiple organ dysfunction was performed in a medical ICU. A total of 72 patients were identified as having an HLH, and data on 56 patients with complete follow up were reported. Precipitating factors consisted of 43 tumoral causes, 13 non viral infections and 10 viral infections. Underlying immune deficiency was present in 38 (67.8%) patients. By

multivariate analysis, factors associated with increased hospital death were shock at ICU admission 4.33 and platelet count below $30 \times 10^9/l$ (4.75). B cell lymphoma and Castleman's disease were associated with increased hospital survival. It was concluded that aggressive supportive care combined with specific treatment of the precipitating factors can produce meaningful survival in these patients.

Ventilatory approach of haematological patients outside the ward might be important. Squadrone et al randomized haematological patients in the wards with acute respiratory failure to receive either oxygen (n=20) or oxygen plus continuous positive airway pressure (CPAP, n=20) reduced the relative risk for intubation.¹⁵

A systemic review of the literature was carried out. The searches were undertaken in March to April 2008 and June 2009. This was linked to individual patient data with surgical outcomes, and regression models were estimated.¹⁶ The sample of this study was composed of 105 patients admitted to the intensive care, during the period between August and September 2013. Analyses were performed on the total number of examinations throughout the period in which 12217 laboratory tests were requested. Of this amount, 6040 tests (49.4%) were within the normal range. In the study, we verified a predominance of

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male individuals (58.1%), aged between 18-59 years (47.6%), with the highest percentage of normal results (92.1%) and, on the other hand, 95.3% of the C-reactive protein requests had abnormal results. Complete blood counts was the most requested test, it is present in 98.3% of medical requests

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CONFLICT OF INTEREST

The authors declare no conflicts of interest

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