

Narang et al³ report much earlier onset of candidiasis. The ratio of mean duration of antibiotics to mean age at onset was 0.55 while studies by Faix¹ 0.58 and Narang et al³ 0.82. The mean birth weight and gestational age was comparable with several studies.^{1,5} Most of our babies had non-specific clinical manifestation. Therefore, high index of suspicion for candidiasis in such ill neonates especially when clinical sepsis with thrombocytopenia sustained more than 3 days, fail to respond to broad spectrum antibiotics. Similar findings were reported by Benjamin et al.⁴ Adverse effects, such as nephrotoxicity and electrolyte imbalance can be diminished or reversed by decreasing the dose of amphotericin B to 0.75mg/kg/day and careful fluid management. Present study confirms the relative rarity of toxicity of amphotericin B in neonatal period.

It is concluded that systemic candidiasis is relatively common in this part of the world and empiric use of third generation cephalosporins and other broad spectrum antibiotics are associated with candidiasis in very low birth infants. This study also suggests that amphotericin B is a reasonably safe choice for empiric therapy in a newborn with birth weight of <1500g, and who is deteriorating despite usual empiric antibacterial treatment.

Received 3rd August 2003. Accepted for publication in final form 7th April 2004.

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Neutropenia

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There is an increasing observation of clinical neutropenia in healthy Omani individual. According to the international range for neutrophil counts (2.5 - 7.5 x 10⁹/L), more than 60% of Omani are neutropenic. In Oman, a different range for the neutrophil count is being used. Although this range is lower than the international range, 36% of individuals still have a lower neutrophil counts. In this study it appears that a lower range (0.5 - 4.4 10⁹/L) is required to cover 95% of the normal Omani individual. Neutrophils are important in providing immunity against bacterial and fungal infections. They are also important in the removal of exogenous and endogenous debris. The neutrophil count ranges between 2.5 and 7.5 x 10⁹/L. A circulating neutrophils count below 1.5 x 10⁹/L is usually abnormal, although lower counts may be normal for certain non-white genetic groups, in particular Blacks and Arabs. In these healthy individuals, there are relatively more cells in the marginating pool, and they are able to mount a normal response to infection. Patients with neutrophil counts less than 0.5 x 10⁹/L for whatever reason are at increased risk of infection.¹⁻⁵ In Oman, the range for neutrophil is 2.0 - 7.5 x 10⁹/L, which is lower than the international level. Despite this lower value, some Omani still have even a lower values. According to these ranges, considerable numbers of healthy Omani individuals are considered as neutropenic.

The aims of this study are to find out the percentage of Omani healthy individuals considered as having neutropenia using the international reference range; to find out percentage of Omani healthy individuals considered as having neutropenia using the Oman reference range and to recalculate the reference range that will cover 95% of Omani population.

The study sample was selected from healthy blood donors. The following donors were excluded: individual with history of recent infection or on antibiotics course, individual with allergy or on anti-allergic medications, had a recent immunization, any bleeding tendency, any individual who had surgery or delivered over the last 6 months and those who received recent blood or blood product transfusion. In addition to these, any donors found to have abnormality in hemoglobin level, platelet, or total white blood cell

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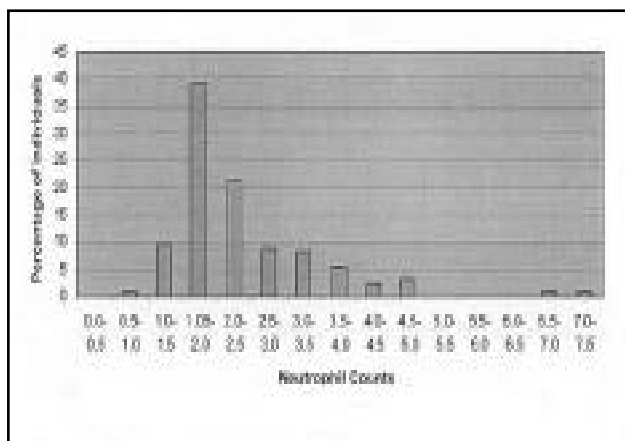


Figure 1 - Different levels of neutrophil counts.

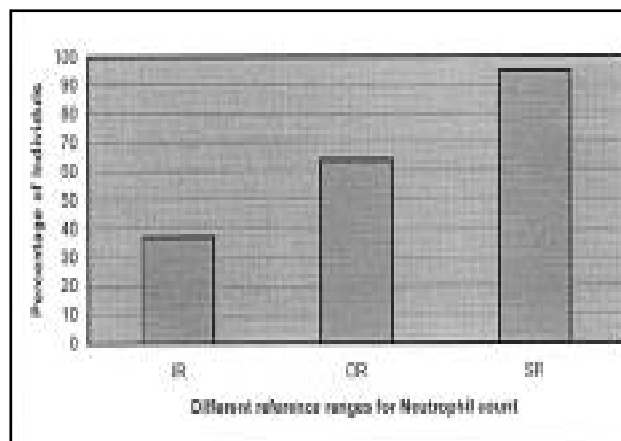


Figure 2 - Comparison between international (IR), Oman (OR) and this study reference ranges (SR).

counts are excluded. The blood analysis was carried out using Cell - Dyn 3500R automated analyzer.

Total of 126 donors was included in this study. Blood samples were analyzed and found that a) 37% of Omani population are within the international ranges for neutrophil counts ($2.5 - 7.5 \times 10^9/L$). Sixty-three individuals are neutropenic (**Figures 1 & 2**). b) Sixty-four percent of Omani population is within the currently used Omani ranges for neutrophils counts ($2.0 - 7.5 \times 10^9/L$). Thirty-six individuals are neutropenic (**Figures 1 & 2**). c) Ninety-five percent of Omani population are having neutrophil ranges between (0.5 and $4.4 \times 10^9/L$) (**Figures 1 & 2**).

Apparently there are some blood donors who fit within the international ranges for neutrophils. That means more than 60% of Omani population are having abnormal neutrophil count. But it covers only 64% of normal Omani population, in other words more than 30% of normal Omani individuals are regarded as having abnormal level of neutrophils. At least in this study, none of these ranges cover or reach 95% of normal population. Statistical analysis of these data showed that a range between 0.5 and $4.4 \times 10^9/L$ of neutrophil is more convenient and covers 95% of the normal population. This range needs further evaluation. To be representative for Omani population, it needs a large study sample to cover the whole Sultanate. Obviously, the current range needs to be change for the reason it is limited to approximately 64% of the population.

In this study, there is a considered number of Omani individuals having neutropenia according to the international and Omani reference ranges. The majority of Omani (95%) are having a neutrophil count between $0.5 - 4.4 \times 10^9/L$.

Acknowledgment. I would like to thank all the laboratory and blood bank staff for their help.

Received 19th January 2004. Accepted for publication in final form 7th April 2004. From the Laboratory Services (Al-Ankoodi) and the Blood Bank Services (Rawther), Nizwa Hospital, Nizwa, Sultanate of Oman. Address correspondence and reprint requests to Dr. Yasser Al-Ankoodi, Laboratory Services, Nizwa Hospital, PO Box 1222, Postal Code 611, Nizwa, Sultanate of Oman. Tel. +968 9355790. E-mail: alankoodi@hotmail.com

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