Clinical Signs and Symptoms for Detecting Early Pregnancy Anemia in Anuradhapura, Sri Lanka; Findings from the Baseline Assessment of a Large Pregnancy Cohort

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Abstract

It is important to identify and treat early pregnancy anemia which will otherwise worsen due to hemodilution and exhaustion of nutrient stores with the progression of pregnancy, leading to adverse outcomes. Clinical features and their validity to determine anemia are important for clinical decision making. But these may differ with the stage of pregnancy, socio-demographic and cultural context. Therefore, we report the prevalence of commonly used clinical signs and symptoms and the validity of them to screen for anemia among first trimester pregnant women in Anuradhapura. All first trimester pregnant women in Anuradhapura district registering for field antenatal care programme during the third quarter of 2019 were invited to participate in a maternal cohort. At the baseline, a clinical interview and examination by a trained MBBS-qualified doctor and a full blood count was performed in each participant. Hemoglobin level less than 11 g/dl was used as the reference value for anemia. Of the 3137 participants, 14.5% (95% CI13.2–15.7, n=451) had anemia. About 3/4th of the anemic women had mild while the rest (n-125,27.4%) had moderate anemia. None had severe anemia. Of the participants, 99 (3.2%) had difficulty in breathing at rest or with mild exertion, 58(1.9%) had palpitations, 302(9.7%) had conjunctival pallor and 147(4.7%) had cardiac murmur. Difficulty in breathing (χ2-6.3, p-0.01), palpitations (χ2-8.1,p-0.004), pallor (χ2-36.8,p-0.001) and murmur (χ2-12.4,p-0.001) were present in significantly higher percentages among the anemic compared to non-anemic women. A quarter of (n-32) the moderate anemic, 14.3%(n-47) of mild anemic and 8.7%(n-198) of non-anemic women were pale. Sensitivity of difficulty in breathing, palpitations, pallor and cardiac murmurs to detect anemia were 5.1% (95%CI3.5- 7.6), 3.6% (95%CI2.2-5.72), 17.5% (95%CI 14.3 - 21.3), and 8.0% (95%CI5.8- 10.8) respectively. Positive predictive value for pallor was 26.2%(95%CI21.5-31.4). Mann-Whitney U test indicated a statistically significant difference (p-0.008) between the hemoglobin distribution of anemic women with pallor (Median-10.2g/dl, IQR-1.1) and without pallor (Median-10.3g/dl, IQR-0.7). In conclusion, majority of anemic pregnant women are asymptomatic in early pregnancy. Even the commonly used signs such as conjunctival pallor has poor sensitivity and cannot effectively be used for anemia screening in Sri Lankan pregnant women. Importance of relying on universal screening with a standardized hemoglobin assessment to identify anemia in early pregnancy is further highlighted with these findings. Universal teachings and utilization of clinical signs and symptoms should be carefully evaluated according to the context

Keywords: *Anemia, pregnancy, clinical signs, pallor, sensitivity*

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