

Postoperative nausea and vomiting in South Africa – the next step

In this month's edition of the journal, Magni et al. describe the incidence of postoperative nausea and vomiting (PONV) in healthy term patients undergoing elective spinal anaesthesia for caesarean section in two hospitals in the Western Cape.¹ Among the 258 recruited patients, the overall incidence of PONV was 33% (95% confidence interval [CI] 28–40%). Of note, the incidence of nausea among Black African patients was 24.8% as compared to 42% in non-Black African patients ($p = 0.004$); no significant difference was seen in the incidence of vomiting (6.8% vs 7.1%; $p = 1.0$). This study is the first to formally show this difference in an obstetric population in South Africa.

In 2010 Rodseth et al., in an 800 patient prospective observational study, found that Black African patients had a significantly lower risk of PONV as compared to non-Black African patients (27% vs 45%, $p < 0.001$). After adjusting for female sex, PONV or motion sickness history, and postoperative opioid use, the risk adjusted odds ratio for PONV in Black African patients was 0.48 (95% CI 0.36–0.67).² Similarly, in 2013, in a prospective observational study of 89 patients, Alli found that Black African patients had a lower risk of postoperative nausea as compared to non-Black African patients (relative risk 0.41; 95% CI 0.28–0.60).³

These three studies represent a total of 1147 patients – a relatively small sample of our population. The question must then be asked whether these findings can be generalised to the entire South African population. Pooling these data gives a combined PONV incidence of 25% in Black African patients (152/605) and 44% in non-Black African patients (236/542); $p < 0.0001$. Black African ethnicity was strongly protective against PONV (odds ratio 0.45, 95% CI 0.35–0.57) and there was no heterogeneity between the studies ($I^2 = 0\%$). I believe that in the light of the magnitude and consistent risk reduction described in these studies, together with the clinical experience of the majority of the South African anaesthetic community, it becomes reasonable to accept this as a true phenomenon.

So where do we go from here? The small number of patients that have been studied suggest that there may still be room for further descriptive PONV studies, particularly in the paediatric population. However, I believe it is unlikely that these will add much more beyond what is already known. Going forward it would be more fruitful to examine this issue from two different angles.

The first would be to undertake a serious study of the aetiology underpinning this phenomenon. Why do Black African patients have a lower incidence of PONV, and in particular a lower incidence of nausea? There have been many vague and largely unconvincing explanations suggested. It has been postulated that variations in the hepatic P-450 cytochrome system may be a potential explanation, with patients who have a CYP2E1 poor-metaboliser phenotype being at greater PONV risk.¹ Other polymorphism of CYP2D6, variations of 5-HT₃ receptor genes and mu-opioid receptor genes have also been implicated in PONV risk.³ As Magni et al. have noted, nausea and vomiting during pregnancy is

less common in African and African-American patients as compared to Caucasians.^{4,5} Analysis of human migration patterns suggest that the Black African population has different HLA and Toll-like receptor haplotypes as compared to the Caucasian population.^{6–8} These receptors play a role in allergy and immune responses and are possible candidates for further exploration. Much work remains to be done in this sphere.

The second aspect would be to formally validate and calibrate commonly used PONV prediction scores, such as the Apfel score,⁹ in the South African population. Risk scores should not be indiscriminately used in populations different from those in which they were developed.¹⁰ Considering the dramatic protective effect that Black African ethnicity confers, it would be a worthwhile task to conduct a large South African PONV score validation study.

Finally, it is critical to keep in mind that despite having a lower incidence as compared to a non-Black African population, one in four Black African patients experiences nausea during or after surgery. It is incumbent on us to ensure that we provide reliable, robust, and standardised systems to provide routine PONV prophylaxis and treatment to the majority of our clinical population.

RN Rodseth

Conflict of interest

None.

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