

Ethnicity and postoperative hyperglycaemia in a South-East Asian population undergoing cardiac surgery

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Aims

Postoperative hyperglycaemia is a known risk factor of adverse outcomes following cardiac surgery.¹ Although South Asian ethnicity is a known risk factor of postoperative hyperglycaemia,² variances in risk profile between the different ethnicities of the Singaporean multi-ethnic South-East Asian population remains unknown. Therefore, we aimed to investigate the association between ethnicity and postoperative hyperglycaemia in a South-East Asian multi-ethnic population undergoing cardiac surgery.

Methods

We obtained and analysed data from 911 adult patients undergoing elective cardiac surgery from 2008 to 2010, of whom 47.7% (n=435) were diabetic and 77.7% (n=708) had postoperative hyperglycaemia. Postoperative hyperglycaemia was defined as a blood glucose level >10 mmol/L within the first 48 perioperative hours. Perioperative variables, genetic associations and outcomes of hyperglycaemic vs normoglycaemic patients were then compared.

Results

Patients with postoperative hyperglycaemia after cardiac surgery were more likely to be diabetic, female, older, more obese, hypertensive and have renal impairment. Patients of Indian ethnicity had a significantly higher incidence of postoperative hyperglycaemia (86.7%, $p=0.043$) than those of Malay (79.1%) and Chinese (75.9%) ethnicity (Fig 1).

Ethnicity was identified as an independent risk factor for postoperative hyperglycaemia, with Indians having a significantly higher risk than Chinese (odds ratio 2.115, $p=0.015$) (Table 1).

The ACE D allele was present in a significantly higher proportion of Indians than non-Indians (65.7%, $p=0.044$), but no genetic associations with postoperative hyperglycaemia were identified.

Postoperative hyperglycaemia was also significantly associated with poorer outcomes of longer high-dependency unit stay and new-onset cardiac arrhythmias.

Conclusions

Our findings demonstrated Indian ethnicity as an independent risk factor of postoperative hyperglycaemia, likely due to insulin resistance and exaggerated hyperglycaemic stress response.³ ■

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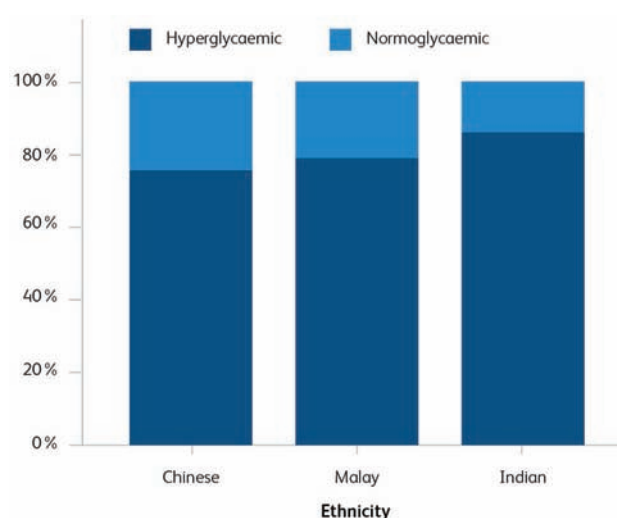


Fig 1. Independent risk factors for postoperative hyperglycaemia.

Table 1. Hyperglycaemia versus normoglycaemia among different ethnic groups

Factor	p-value	Odds ratio (95% confidence interval)
Indian vs Chinese	0.015	2.115 (1.154–3.879)
Malay vs Chinese	0.109	1.772 (0.880–3.568)
ACE inhibitor	0.045	1.408 (1.007–1.968)
Hypertension	<0.001	2.131 (1.482–3.063)
Age	0.008	1.023 (1.006–1.040)

ACE = angiotensin-converting enzyme.

Conflict of interest statement

No conflict of interest.

References

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