

# Spinal anaesthesia and maternal hypotension: basic pathophysiology and an opinion of an interdisciplinary working group on its management

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Hypotension after spinal anaesthesia occurs in most parturients undergoing caesarean section. The text describes the mechanism of hypotension, summarises the current evidence for treating this complication, and presents the consensus opinion of an interdisciplinary panel on its management. The text has been endorsed by the Czech Society of Anaesthesiology, Resuscitation, and Intensive Care Medicine, the Czech Gynaecological and Obstetric Society, and the Czech Neonatological Society.

**Key words:** hypotension, spinal anaesthesia, caesarean section, arteriolar vasodilation, systemic vascular resistance, vasopressors, phenylephrine, ephedrine, prevention.

## Introduction

Spinal anaesthesia (subarachnoid anaesthesia; SAB) is the method of choice for most cases of caesarean section, both elective and acute. The most common complication associated with this type of anaesthesia is hypotension, occurring in up to 80% of patients. Hypotension can also occur after epidural blockade, but its frequency, rate of development and severity are much lower than in the case of SAB. Hypotension is usually accompanied by significant maternal discomfort (nausea, vomiting, dyspnoea, anxiety) and can also be a risk for foetal adaptation (foetal acidosis, or even neurobehavioural changes) [1–3].

The severity of the effects of hypotension in SAB on the foetus correlates with the severity and duration of hypotension. However, data show that the duration of hypotension is a more significant factor than its severity (four minutes of hypotension have been shown as the critical threshold in studies) [3]. Therefore, a fundamental principle of the current management is to focus on preventing hypotension rather than on reactive treatment once it has occurred. Hence, with proper management, the consequences of hypotension in SAB for the foetus/newborn should be clinically insignificant. Thus,

in addition to controlling placental perfusion, an essential goal of effective control of systemic arterial pressure (SBP) before delivery of the newborn is to reduce maternal nausea and vomiting, which are thought to result from reduced brainstem perfusion and ischaemia in the vomiting centre [4, 5].

## Definition of hypotension

The most common definition of hypotension used in studies is a fall in systolic blood pressure <80% of baseline or a systolic blood pressure <100 mmHg. Practice shows that most experienced obstetric anaesthesiologists perceive SBP <100 or <90 mmHg [6] as the limit of hypotension in the parturient.

In clinical practice, the baseline SBP measured in the operating theatre may be stress-elevated, approximately 15 mmHg above the value measured on the morning of the caesarean section and 20 mmHg above the value measured at the last visit to the antenatal clinic. Therefore, we recommend choosing the value measured in the operating theatre immediately before SAB as the baseline SBP value, as this is more likely to maintain adequate perfusion blood pressure after SAB administration [3, 7].