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In the fetal environment, the most striking change caused by hypoxia-hypotension is the redistribution of blood flow in the presence of IUGR compensatory mechanisms. In the fetus, the head growth or brain sparing is the result of reduced blood flow to the head, adrenal glands and brain and decreased blood flow to the nonvital organs as digestive tract, kidneys and lungs.

In order to study possible mechanisms of haemodynamic redistribution associated with utero-placental insufficiency in the human fetus, insight in normal Doppler blood flow is necessary. In the late gestation fetus, Doppler blood flow patterns were first obtained in the common carotid artery (Marsal et al., 1983; 1984) and the internal carotid artery (Vydmedt et al., 1986). Lately, Doppler flow velocity waveforms have been obtained as early as 10-11 weeks of gestation (Lindström et al., 1991, 1992).