The placenta is a fetal organ with different functional values as a metabolic, excretory, and respiratory in addition to endocrine functions.To evaluate the vasculature and apoptosis of human placenta atdifferent ages (preterm and post-date) in relation to APGAR score of the newborn infants at birth.

A total of 50 normal human placentae,delivered by elective cesarean section,were used.These placentae were divided into 3 groups according to the gestational ageinto:(15) Preterm placentae, (20) Term placentae(as control) and (15) Post-date placentae.Regional placental vascular study was achieved by using latexcasting technique, while the detection of the apoptotic cells in the placental tissues was done via the insitu direct DNA fragmentation Assay.

The terminal villi of the preterm placentae group showed asignificant reduction in theirnumbersand lengthsP value(0.0035), (0.045), respectively, and no significant difference in their diametersin comparison to the control group. While the terminal villi of the post-date placentae revealeda significant increase in their numbers (P value <0.001) with no significant difference in their lengths and diameters.The terminal villi of preterm and post-dateplacentae revealed a significant reduction in the numbers of the apoptotic cells (P value (0.0053) and (0.0004) respectively.The APGAR score of preterm and postdate placentae reported significant decreasein their values (P value < 0.001 for both). As well as, there were significant changes in the numbers of apoptotic cells among these three groups related to theirApgar scores.
Conclusions: it was revealed that the vascular pattern of placenta by latex casting technique and apoptotic cells numbers by tunel test were reflectedfor both the maturity of placenta and physiological status of baby which was assessed by Apgar score.