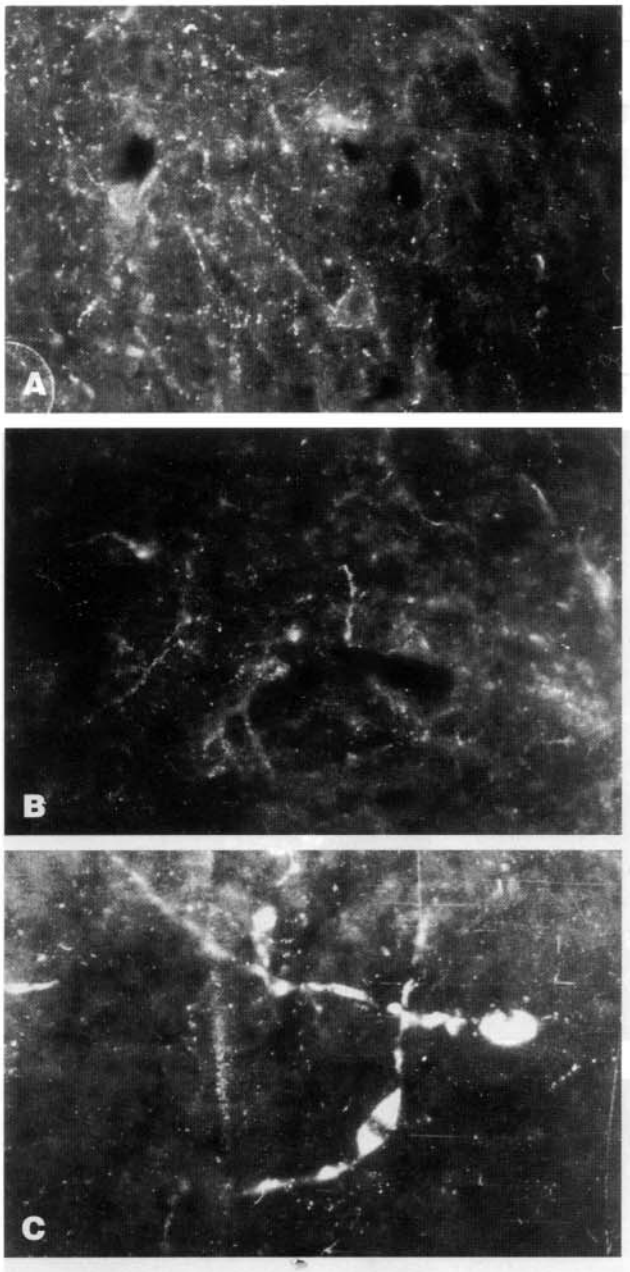

Fig. 2. High (A) and moderate (B) densities of DSIP-IR fibers in the median eminence of 150 days and 60 days old infants, respectively. Magnification 570x. DSIP-IR cell bodies in the infundibular nucleus (C). Magnification 455x.

the rostro-caudal extent of the hypothalamus; the distribution was rather restricted to defined nuclei and areas. In the anterior hypothalamus, the perikarya were present principally in the preoptic area. Their density varied in infants aged between 1 to 9 months. At 1–2 months of postnatal age, sparse cell bodies were observed (Fig. 1A). The density decreased progressively between two and four months and only rare DSIP-IR cell bodies could be seen (1B). At 9 months after birth, there was no immunoreactive perikaryon. The immunoreactive fibers were more abundant when compared to the immunopositive cell bodies. They were present in all nuclei and areas of the anterior hypothalamus. They varied in the preoptic area in a parallel way to cell bodies and only rare fibers were found at older ages: 4–9 months (Figs. 1A-B). In the mediobasal region, the immunoreactive fibers were present in the entire hypothalamic level. The median eminence represented the structure displaying the highest density of fibers organized in a dense network. This pattern was particularly observed in infants aged between 4 and 9 months (Fig. 2A). At one month, only relatively low density was observed in the median eminence. At two months, a moderate density could be seen (Fig. 2B). The immunoreactive perikarya were sparse, located principally in the infundibular nucleus, and did not vary with age (Fig. 2C). Finally, in the posterior region, no immunoreactivity for DSIP was found in cell bodies, and only few and rare immunoreactive fibers were present. This pattern was observed for each infant age analyzed.

Discussion

The relatively good preservation of the tissue, due in great part to the fixation mode and to the relatively good post-mortem delay, allowed us to provide, to our knowledge, the first investigation of the distribution of DSIP-IR cell bodies, fibers and terminal labeling within regions of the hypothalamus in human during the first postnatal year. These findings reveal an extensive distribution of DSIP immunoreactivity in the human newborn and infant hypothalamus.

We found that the majority of hypothalamic structures exhibited a similar pattern during this postnatal period. Indeed, there were no obvious significant changes in patterns, related to age. However, some areas presented considerable variations in the distribution and the density of DSIP-IR neuronal elements in relation to the postnatal age investigated. Variations in the DSIP-IR neuronal element pattern appear to follow two archetypal patterns. One pattern is illustrated by the median eminence which displayed rare immunoreactive fibers at the first weeks of life followed by a gradual increase. At 4 months of life a very dense network covered the structure. An equivalent pattern could be observed in the other, older infants (this study). The other pattern is exemplified by the immunoreactive neurons present in the preoptic area. These immunoreactive elements were present at low density at the first postnatal month. Their number was remarkably lower at the second month after birth and there was no immunoreactive cell body in older infants. Similarly, no immunoreactive cell bodies were seen in the adult preoptic area (Vallet et al., 1990). Interestingly, it has been noted that neonatal animals have a tendency to show decreased immunoreactivity of neuronal perikarya (Pu and Dubois, 1992), and it may be for similar reasons that we were not able to detect DSIP-IR neurons so readily in infants. We have previously noted similar marked age-related changes during the first postnatal