



Exuberant Normality or Benign Malignancy?

Given the high incidence of pituitary brain tumours Dr *Andrew Levy*, Reader in Medicine in the Research Centre for Neuroendocrinology, asks why they grow in the first place, and why, having taken the trouble to appear, they remain so modest in their malignant aspirations.

By the time we die, more than one in ten of us will harbour a tumour in the pituitary, a gland located at the base of the brain. Fortunately, most of us never know it because tumours of the pituitary, although common, are very well behaved and rarely cause symptoms. Since most tumours are the

many more die in response to specific hormonal stimuli. These stimuli (such as menstruation or acute stress) come in waves so, for example, pulses of oestrogens or steroids wash over the pituitary in waves. Those cells that survive this onslaught then become resistant to future hormonal stimuli. As

pituitary that are both hormone- and time-dependent. This suggests that a series of stimuli, depending on their strength and timing, might induce the pituitary to produce a response characterised not only by changes in hormone secretion, but also by changes in the relative populations of different cell

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result of excessive cell division, Levy and his group turned to the normal pituitary and asked: 'What makes cells within it divide or die?'

What they discovered was surprising: rather than a quiescent structure composed of cells that rarely divide, they found a very rapid turnover of cells – sufficient, in fact, to entirely replace the whole pituitary every month or so in the young. Many of the newly formed cells die within a day or so of being 'born' and, for a further week or two,

each hormonal wave passes, the pituitary has to 're-set' and prepare itself for the next wave, so it sets about regenerating the population of cells that died. However, these cells are also susceptible to death, with the same time constraints, if the stimulus is reintroduced a week or two later.

This work has dramatically changed our view of the pituitary. Levy's group has unearthed a very carefully orchestrated and highly specific series of cell division and cell death responses in the normal

types. Between each stimulus, the pituitary may not be able to restore the different populations of cells to normal levels, so perhaps it is this that leads so many of us to develop pituitary tumours as we age. If so, it would appear that pituitary tumours are the result of exuberant normality, rather than benign malignancy. ■

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