BMJ 2018;363:k5164 doi: 10.1136/bmj.k5164 (Published 10 December 2018)

EDITORIALS

Melatonin in children with cancer

Unsupported claims of effectiveness are misleading families

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Recent calls have been made for young cancer patients to be given melatonin as part of NHS "standard of care" treatment. The premise is that melatonin "could save lives as well as the NHS money"—by improving survival and reducing adverse side effects.[1] This has generated understandable media interest.[2]

Cancer affects one in 500 people under the age of 14 and is a leading cause of death in childhood. It is highly emotive, with the potential to have devastating effects on the lives of affected families who, quite understandably, will go to extremes to support their children. Reassuringly, five and 10 year survival rates have doubled since the 1970s,[3] with the increases being attributed to systematic and widespread adoption of collaborative clinical trials to evaluate new approaches to treatment.[4]

Although over 80% of young people who have cancer diagnosed will survive long term, six out of 10 will experience one or more serious late effects a decade after they completed treatment.[5] Consequently, the search for approaches that increase survival while reducing short and long term morbidity, remains a priority.

Melatonin is an indolamine hormone produced by the pineal gland.[6 7] Its main physiological role seems to be the regulation of circadian rhythms of sleep, with evidence that is effective in treating sleep disorders, including prevention and management of jetlag.[8] In association with behavioural modification, it is used in the management of sleep disorders in children,[9] including those with learning disabilities and those with disrupted sleep associated with brain tumours.[10]

Weak evidence

Melatonin's antioxidant property is the basis for its potential to inhibit the growth of cancer cells, with studies in vitro and in animals suggesting antimitotic or immunomodulatory effects.[9] Melatonin has been tested as an anti-cancer adjunct in clinical trials in patients with many different cancers, though only one trial was in children. The trials have been drawn together in multiple systematic reviews,[10] which have highlighted the need for stronger evidence of benefit. These reviews often comment on the moderate to high risk of bias in underlying trials as well as their heterogeneity. Such weaknesses make pooled estimates drawn from meta-analysis unreliable and potentially misleading.[11] A clear understanding of the limitations of systematic reviews is essential when interpreting their findings. Plain English summaries of findings, including appropriate caution and signposting to other patient resources, may help to minimise misinterpretation and any attendant distress.

The only study of melatonin in children with cancer is a preliminary (phase I) dose finding study, intended primarily to identify an appropriate dose for further investigation.[12] This study has been presented as a conference abstract but not yet published in a peer reviewed journal. It showed tolerability, but side effects included nausea, anorexia, dizziness, fatigue, rashes, and weight changes. Notably, children being treated with anthracyclines, a widely used class of anti-cancer drugs in young people, were excluded because of concerns about the possible harmful interaction with such chemotherapy.

The media coverage surrounding the use of melatonin has provoked, in equal measure, interest and concern from families affected by childhood cancer. Many parents have been left wondering if they should give melatonin alongside their child's treatment and are concerned that information about this supplement was not available to them earlier. Medical and nursing professionals in the UK and Ireland believe there is insufficient evidence to endorse widespread use of melatonin by children with cancer at this stage[13] and that claims of effectiveness are misleading to families.

Inadequately supported statements from widely trusted sources may lead families to use melatonin without informing medical professionals. Such statements may cause additional distress to families, who are already under immense pressure. As we strive to offer hope and support to families affected by childhood cancer, all individuals and organisations should exercise responsible caution to avoid unintentionally compounding distress and harm through premature claims of treatment benefits, particularly improved survival.

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The evidence for melatonin's use as an anti-cancer agent is currently weak, and in children effectively non-existent. The proposal to introduce melatonin as "standard of care" in young people with cancer is not supportable. Robust evidence from carefully designed and conducted clinical trials must underpin all treatments for cancer in young people, and melatonin is no exception.

Competing interests: We have read and understood BMJ policy on declaration of interests and declare no competing interests.

Provenance and peer review: Not commissioned; externally peer reviewed.

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