

Read all about it... It can be awkward when a patient asks you about a report in their favourite tabloid detailing an amazing research breakthrough or a 'cutting-edge' new treatment / test and you don't know what they are talking about! So this section fills you in on the facts.

Alzheimer's can be spread from human to human, explosive research claims

The Mirror – 9 September 2015

This story made the front page of most of the tabloids on 9 September and, at first glance at least, would seem to carry implications for any patient soon to undergo surgery. The story centres around the publication of a study carried out by a team from UCL and Queens Square in *Nature* journal. The research team were investigating iatrogenic Creutzfeldt-Jakob Disease (CJD) caused by administration of human growth hormone, which was previously extracted from cadavers. CJD is known to be caused by prions. 'Prion' is a contraction of 'proteinaceous infectious particle' – it is a small misfolded protein which, in living organisms, induces otherwise normal proteins to fold into the same misfolded state,

leading to amyloid-type protein aggregates. Indeed, one of the main characteristics of CJD is amyloid plaque deposits within the neocortex of the brain.

The *Nature* study looked at the brains of eight people who had died from iatrogenic CJD. In four cases they found significant deposits of amyloid- β (A β), which again is a misfolded protein but one that is strictly associated with Alzheimer's disease, often referred to as 'senile plaques'. A previous case study of over 100 iatrogenic CJD infections has only shown minimal A β in a handful of cases. A Pubmed search reveals that several studies have shown that in laboratory conditions in transgenic mice, direct implanting of 'seeds'

of A β plaques into the brain can instigate and spread A β lesions in a prion-like fashion. The obvious question raised by these findings is, "could growth hormone injections have infected other patients with A β ?" Sadly, further speculation in the national media lead to the profuse printing of statements such as "surgical instruments and blood transfusions could transmit Alzheimer's", despite the fact that there is no evidence whatsoever of this being the case. In summary, you can safely reassure any patients concerned about this, as all this research really does tell us is that our understanding of Alzheimer's and CJD is far from complete.

Launch of 'liquid biopsy' to find cancer in healthy people

Reuters – 10 September 2015

This story popped up in several places in September and is based on a press release from a company in the United States of America which is now offering 'liquid biopsies' for cancer for prices of \$299 and upwards. Regular readers of this section will know that a lot of exciting research is being done to investigate the clinical application of the fact that minute quantities of DNA from cancer cells are detectable in the bloodstream of affected patients. The company is marketing blood tests to be used as a screening tool in healthy patients or as

a monitoring test in patients with known cancer. The company's website explains that their tests can detect DNA fragments specific to a number of cancers, including prostate, lung, breast and colorectal. The marketing literature explains the 'liquid biopsy' is like having a 'cancer stethoscope' and is ideal for people with a family history of the BRCA1 prostate / breast mutation.

This story, for me, is very exciting because it indicates how close we are to a potential major revolution in cancer screening.

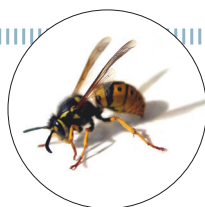
The problem is that we are not there yet,

despite this product being commercially available. The marketing material comes with suggestions that these tests obviate the need for CT scans and surgical biopsy, but then the fine print explains that the 'liquid biopsy' is just an adjunct to standard treatments. There is no evidence that it could detect a small or early tumour and a negative result does not rule out a cancer. What is needed now are some clinical trials to find reliable applications for this technology. The company has trials underway at the moment.

Wasp study finds sting in the tail for cancer cells

The Guardian – 1 September 2015

This story was a report on a piece of research published in *Biophysical Journal* this month. The research centres around a toxin found in the venom of the Brazilian *Polybia* Paulista wasp. *Polybia*-MP1 in wasp toxin has previously been shown to have anti-cancer properties. Previously it had been shown that MP-1 was interacting with excess serine expressed on cancer cell surfaces to increase cell membrane permeability. This new research shows that MP-1 also interacts



with phosphatidylethanolamine (PE) on model membranes in the lab. This newly described interaction massively increases the permeability of the cell membrane through formation of pores. It is theorised this could lead to a new method for delivering novel chemotherapeutics. So, don't start advising your patients to smear themselves with jam and stand outside on a warm day just yet, this is still a very long way from having a definite clinical application.



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