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The Solent and IOW Pituitary Support Group

The Pituitary Foundation
Solent & Isle of Wight Support Group

Newsletter No. 90, March 2025

Hello everyone,

Welcome to another edition of the Solent and IOW Pituitary Support Group Newsletter, for March 2025.

Thank you to everyone who has contributed, by sending material for the newsletter and giving their encouragement.

We aim to produce a newsletter four times a year, and normally it is timed to be issued shortly before each of the main support group meetings at the Cosham Community Centre. The next meeting is on Saturday 29 March at 10 am. There will be tea, coffee, juice and biscuits. And a raffle. Please note that NO nuts or nut derivatives are allowed in the building.

The meeting will include a demonstration of Tai Chi by Kathryn Pearce. It is hoped that most of you will join in with the exercise. She will also be telling us about exercises that are specially designed to help combat some of the effects of arthritis. Once again, everyone will be invited to join in. There will also be time to chat, and to give and receive advice and information about pituitary conditions and related matters.

We have in the past, often welcomed new patients and their partners, family or friends at meetings, so if you have recently found out you are a pituitary patient or just found out that we as a support group exist, please get in touch and join us for future meetings and you'll be made very welcome.

Find us on Facebook - The Solent and IOW page is in the form of a group. Together we'll be updating and posting relevant information on there. Anyone that uses Facebook can search and join the group. It is listed as the following: - The Solent & IOW Pituitary Patient Support Group. This is in addition to the main Pituitary Foundation page and other pituitary Facebook groups.

========== Meeting dates for your diary for 2025 ==========

Most meetings at Cosham Community Centre, Wootton Street, Cosham, PO6 3AP

At the Cosham meetings we will have tea, coffee, juice and biscuits available. You may bring your own snacks if you wish, but please note: NO nuts or nut derivatives are allowed in the building. Masks are no longer essential at the meeting, but you may wear one if you wish.

- Saturday 29 March 2025 at 10 am – We hope to have Kathryn Pearce providing tai chi exercises, as well as exercises specifically designed to help those with arthritis
- Saturday 28 June 2025 at 10 am – No formal speaker; a patient-led meeting
- Saturday 27 September. We would normally have a meeting on this date, and one was arranged. However, the Pituitary Foundation have organised a big get-together meeting in Southampton on this day. So we are cancelling the Cosham meeting and going to Southampton instead. See page 3 for more information.
- Saturday 6 December 2025 – Our pre-Christmas meeting, with festive food and a quiz
- Isle of Wight meeting, Saturday 19 July at 10:30 am, probably at Lake Community Centre, although other venues are being considered

Possible speakers for future meetings include Dr James Lawrence and Dr Smith from Salisbury, the endocrine nurse Sirbrina, a radiographer, a pharmacist, tai chi and arthritis exercises, and blood bikers. Also possible speakers on mindfulness, laughing yoga, a life coach and others.

There is always a raffle at the main meetings in Cosham and Lake. Prizes gratefully received on the day please.

Receiving your newsletter - If you would rather receive your newsletter by email, please email Howard at: howardpearce1@yahoo.com or Gail at g.weingartner@btinternet.com and let them know. Or let Gail or Howard know if you wish to come off the mailing list altogether.

More than half of the newsletters are now sent out by email. Unfortunately, there are often a few people who have changed their email address, and they do not get their electronic copy. We usually manage to send them a copy by post, but inevitably it is a few days late. If you have changed your email address, please let us know.

The cost of posting the newsletter – Printing and postage of the newsletter for those who do not get their copy by email is a major cost item, around £300 a year, and the price of stamps keeps going up. It would be very much appreciated if those receiving the newsletter by post would make some contribution towards the cost of printing and postage, either by stamps or money, or change to email delivery. Gail and Pam Weingartner and Melissa Reeds are always happy to receive a book of stamps from anyone who receives the newsletter by post. They send a special thank you to everyone who has given stamps or money for this.

It's <u>your</u> newsletter – We would love you to write something for the newsletter. If you have something to share – your experience as a patient, something you have done, some wise words, something to make us laugh, or something that we all ought to know – please send it for the next newsletter, which we are aiming to produce in May or June 2025.

Donations

Our thanks to our fundraisers for their kind donations and fundraising on our behalf. It is because of the continued support of this kind that we are able to have our quarterly meetings and fund the newsletter. But, we DO NEED some proactive fundraising to keep our bank balance in the black, so please give thought to and let one of us know your ideas.

A special thank you to all who contributed to this newsletter.

Gail writes about the Pituitary Foundation meeting in Southampton in September

The Pituitary Foundation are holding a 'Get Together' on Saturday 27th September, which is of course, the same date as our Cosham meeting. So, we are cancelling ours and all heading to, what looks to be, a very interesting day. The only details we have at the moment are that the Get Together will be held at the Leonardo Royal Grand Harbour Hotel, West Quay Road, Southampton SO15 1AG from 10am until 4pm. We will hear from eminent speakers and obviously meet others affected by pituitary conditions.

Tickets won't be available until late Spring / early Summer, so look out for more details on the Foundation's website and we will flag this for you of course. For now, hold the date in your diary. We'll be there so come and join us !

Gail Weingartner and Rod

Our area coordinator Gail Weingartner and her partner Rod tied the knot on 5 October last year. Here are the happy couple on their special day.

Gail says - Instead of answering your questions for this edition of our Newsletter, we asked Dr Lawrence to write a piece about Prolactinoma. This came about because during our last Committee meeting, the topic came up and I for one, realised just how little I knew about it. OK it is lengthy and Dr Lawrence did ask if he should cut it down, but I said "no" because it is a subject a lot of us know very little about. So, grab a coffee, tea or your favourite tipple, concentrate and learn. A BIG 'Thank You' as always Dr Lawrence…….

Prolactinoma

Diagnosis and Symptoms

Gail has asked me to write something on the subject of Prolactinoma, its treatment and some rare but important side effects of the drugs used to treat it.

Before I start though, I am sure I would speak for all of us in saying how thrilled I was to see Gail's tireless dedication to improving the life of those living with pituitary conditions being recognised by the Pituitary Foundation who have named her a 'Pituitary Hero'. Well done Gail and thoroughly deserved! Of course, Gail did not tell me this, I had to discover it myself in the pages of Pituitary Life but I doubt this would surprise anyone who knows Gail!

Prolactinomas secrete the hormone 'prolactin'. The main action of this hormone is, together with oestrogen, to prepare the breast for lactation (milk production). During breast feeding, prolactin has another potentially useful function which is to suppress the production of LH and FSH (gonadotrophins) from the pituitary. This tends to cause reduced fertility whilst breast feeding which, for many women over the course of human history, was their only chance, other than abstinence of course, of respite from a state of almost constant pregnancy. Clearly, in times when food was scarcer than it is now, having a little time for a woman to recover after the birth of a baby before the nutritional and metabolic demands of the next pregnancy was a possible survival advantage and seems to make sense in evolutionary terms.

These actions of prolactin predict the symptoms that someone with a prolactinoma may develop when prolactin is made to excess by a pituitary tumour. They include cessation of menstrual periods, reduced fertility and spontaneous (i.e. without a recent pregnancy) breast milk production in women (called 'galactorrhoea') and in men, low testosterone levels, reduced fertility, often a little breast enlargement. The breast enlargement seen in men is called 'gynaecomastia'. This is enlargement of a small (1-2 cm) disk of glandular breast tissue that men (and girls prior to breast development) have which may respond to oestrogen and subsequently enlarge. This is different to a male breast with abundant fat deposits in it more commonly referred to as 'man-boobs'- this is an issue with body fat content and perhaps distribution rather than a specific hormone related issue. Often the enlargement of glandular tissue in men is not especially visible but it may certainly be uncomfortable and is likely related to lower testosterone levels altering the balance between testosterone and oestrogen in males.

Small prolactinomas (called 'microprolactinomas' if under 1cm in diameter) are one of the commonest treatable causes of reduced fertility in the UK at present (approximately 20% of cases of female sub-fertility and a few cases of male subfertility). They are not always associated with all the symptoms above and can just present with difficulty in achieving pregnancy. Assuming there is no other reason for reduced fertility in either partner, they may be very satisfying to treat and we not uncommonly see pregnancy established on treatment even before the first period returns. Small 'microprolactinomas' are diagnosed far more commonly in women than men (ratio approximately 10:1) probably because the symptoms of galactorrhoea and periods stopping in women are more obvious than more vague symptoms

of lower testosterone levels in men (erectile dysfunction, lower libido, reduced fertility). Men are more likely than younger women to be diagnosed with larger tumours which cause headache or visual loss although the difference between the sexes narrows at menopause.

Larger prolactinomas also have a particular importance. This is because larger pituitary tumours may present not so much with hormone-related problems (even if they are actually there but not noticed or just tolerated by patients) but with symptoms due to their size (e.g. headache) and pressure on the optic nerves causing loss of vision.

Generally speaking, for all tumours other than prolactinoma, urgent surgery is needed for pituitary tumours that are compressing the optic nerve and causing loss of sight as there is a better chance of regaining lost sight and preventing further loss if the tumour is 'debulked' (made smaller) as quickly as possible. However, prolactinomas are often an exception to this rule as they may shrink very dramatically indeed (within just a few days) on treatment with tablets (most commonly, cabergoline). Because of this potential for very dramatic response to treatment with cabergoline, we always make sure that we know whether a pituitary tumour is a prolactinoma or not before we advise urgent surgery. If it is, there would usually be a discussion between endocrinologist, neurosurgeon and patient in this situation when deciding on the best course of treatment rather than automatic recourse to surgery.

Although prolactin is, by definition, raised in people with prolactinomas, these are not the only cause of a raised prolactin level and, as usual, there is some complexity around interpreting blood results.

Like many pituitary hormones, prolactin can rise with stress and having a difficult time finding blood may be more than enough to raise it in some people. Sometimes we need to repeat the test after an overnight fast after putting in a cannula and either waiting 40 minutes or so or doing repeated tests every 20 minutes for an hour where we suspect that stress is playing a major role in prolactin elevation (in which case the levels will tend to fall when we do all of this).

Prolactin levels naturally go up during pregnancy (an important condition to exclude in a woman with high prolactin levels and recently stopped periods before concluding that this is due to a prolactinoma!), during breast feeding where levels are also naturally high and as well with a number of commonly taken medications including (but not limited to anti-nausea drugs, many drugs used to treat mental illness including antidepressants, major tranquilisers, some painkillers and some treatments for stomach acidity). In addition to this, there are quite a few people who have normal pituitary glands but who seem to have high prolactin levels when tested because their prolactin molecules stick together in clumps meaning that the action of free 'non-clumped' prolactin in the body may be normal whilst when we measure the total amount in a blood test, we see that the levels look high because the clumped prolactin is also measured. We often do a special test to clarify this (PEG precipitation test) if we suspect that a patient could be one of the approximately 20% of people who have 'macroprolactin'. Some other medical conditions may cause high prolactin levels including kidney failure, shingles, cirrhosis of the liver and epilepsy. Where we think medication may be causing high prolactin levels we try, if possible, to stop the medication for about 3 days before measuring the prolactin again. Obviously, if the second test is normal, we are no longer concerned about the patient having a prolactinoma, although we may still need to consider treatment to prevent the consequences of this such as periods stopping, infertility and breast milk production in women or sexual dysfunction and breast growth/soreness in males.

Once we have excluded the conditions above causing prolactin to be raised, we would then typically then proceed to an MRI scan of the pituitary gland. In general, there is a fairly good correlation between the size of a prolactinoma and the amount of prolactin that it secretes (releases into the blood stream) and when the blood tests, symptoms and MRI all match each other, then the diagnosis is usually clear.

However, it is not always as straightforward. High levels of prolactin can sometimes be seen when some other pituitary tumour, not a prolactinoma, enlarges in a such a way that it compresses the pituitary stalk. You might think of the pituitary as looking a little like a cherry suspended beneath the brain by its stalk. The stalk has a number of functions but one of these is to deliver a chemical called dopamine from the hypothalamus (part of the brain) to the pituitary. Left to its own devices, the pituitary would just release large amounts of prolactin all day long (in other words it does not require any signals to do this). The way that this is normally controlled is by prolactin release being restrained (inhibited) by dopamine delivered to the pituitary down the stalk. However, if the pituitary stalk is compressed by another pituitary tumour, the dopamine might become held up in the stalk and then the pituitary may release higher than normal levels of prolactin even when there is no prolactinoma because it does not get this dopamine 'brake'. Generally speaking, we can identify this situation where the levels of prolactin are not anywhere near as high as they would be if the tumour, which has to be fairly large to compress the pituitary stalk, were a prolactinoma.

Some other conditions can cause some elevation of prolactin levels, most commonly an underactive thyroid but also in active acromegaly (growth hormone excess).

Rarely, blood tests can show only a slight elevation in prolactin levels when in fact a large prolactinoma is really causing massive elevation. This is due to a technical issue with some antibody-based lab methods used to measure prolactin. When we see a large tumour with symptoms of a prolactinoma, but only slightly high prolactin levels, we will often ask the lab to run the samples again to exclude this so-called 'Hook Effect' which they do by diluting the sample and finding a higher prolactin level in a more dilute sample which otherwise wouldn't make any sense.

As with all pituitary tumours, it is essential to test all the other pituitary hormones when we find a tumour to make sure there wasn't any deficiency that requires urgent treatment (particularly cortisol, the adrenal hormone) and we would replace this as a matter of urgency.

Very occasionally, a prolactinoma may also make growth hormone so it is possible to have a tumour that causes the symptoms of a prolactinoma and, on top of that, also the symptoms of acromegaly (the cells that become the pituitary cells with these different functions actually start life via a common ancestor). We always consider this possibility and measure IGF-1 in anyone we think may have a prolactinoma as treatment with cabergoline will not necessarily be sufficient to treat the acromegaly even if it does treat the prolactin aspect.

Treatment

Once we have made the diagnosis, treatment of a prolactinoma is usually with tablets, usually cabergoline being the first line and best option. Surgery can be an option for some tumours in some people some of the time but most people would prefer a tablet to an operation as a first line treatment. Obviously, if cabergoline does not work (up to 20% of individuals/tumours) or causes intolerable side effects (see later), then surgery can be a good second line option. Surgery also has more of a role if a prolactinoma is also releasing growth hormone and may be considered for some tumours which are cause optic nerve compression and loss of vision.

The use of cabergoline and other similar drugs is based on the fact that prolactin-releasing cells will shrink, proliferate less and produce less prolactin when exposed to dopamine which is the natural control on prolactin production, delivered from the hypothalamus down the pituitary stalk. These drugs mimic the action of dopamine by acting on dopamine receptors on the prolactin producing cells so they are called ‘dopamine agonists’.

Dopamine agonist drugs like cabergoline are also used to treat a range of other conditions including Parkinson’s disease, a neurological condition associated with tremor and poverty of movement linked to low levels of dopamine action in a particular region of the brain and also restless leg syndrome but the doses used in these conditions are typically much higher (often 10-20 times higher) than the doses used for prolactinoma treatment.

Cabergoline is expected to normalise prolactin levels and cause tumour shrinkage in up to 95% of micro-prolactinomas and around 80% of macro-prolactinomas (prolactinomas with a starting size > 1cm). Given that most of the symptoms of prolactinoma are caused by lack of periods and reduced oestrogen levels in pre-menopausal women, a possible alternative treatment if pregnancy is not desired and the tumour is small is the oral contraceptive pill which provides both oestrogen and periods (‘withdrawal bleeds’). However, this does not cause tumour shrinkage and careful observation is needed to ensure that the tumour does not actually grow with oestrogen only treatment which can happen occasionally. In men, testosterone replacement alone is generally not appropriate (most tumours are larger in men) and does not appear to work well without the prolactin levels being brought down. However, testosterone replacement may be required as an adjunct to cabergoline depending on how they respond to cabergoline alone. This may be because prolactin can inhibit some of the actions of testosterone in the body.

Adverse effects of cabergoline mainly include nausea or vomiting, headache, dizziness, vertigo, and low blood pressure. We generally advise the drug to be taken in the middle of the main meal of the day, ideally in the evening. By no means everyone experiences nausea with cabergoline but in those that do, taking it with food and experiencing any nausea whilst asleep works for most people. A proportion of individuals however simply cannot tolerate cabergoline or any other drugs in its class and for them, second line treatments such as surgery may need to be considered.

The side effect of nausea makes sense when we consider what cabergoline does which is to stimulate dopamine receptors in the brain. It is not possible to target the pituitary perfectly with these drugs (although nature does this by delivering dopamine directly via the pituitary stalk). This means that they will potentially stimulate other dopamine pathways in the brain. Dopamine is a transmitter in some of the brain circuitry involved in nausea and vomiting and for some, cabergoline is enough to activate these pathways and cause this side effect.

Some drugs that are used in mental health to control the symptoms of psychosis work at least in part by blocking dopamine transmission within the nervous system. Psychosis generally describes mental health symptoms that occur when there is a disconnection with reality (this is a simplistic description) involving experiences such as delusion or hallucination as opposed to ‘neurosis’ which can be thought of more as an unwelcome exaggeration of normal thoughts that we all may have from time to time (e.g. anxiety, low mood, OCD). It would make sense to think that drugs like cabergoline which do the exact opposite of an anti-psychotic drug by stimulating dopamine may on occasion (and it is actually very rare) cause people to experience symptoms similar to psychosis and indeed there are a number of case reports of this happening, although this appears to be much more common in people with a history of either past or current psychosis than those who have never had psychosis before.

Despite the fact that cabergoline has been in use for over 40 years, it has only come to light more recently that it (and other drugs in its class) may be associated with the development of

a set of adverse effects collectively known as Impulse Control Disorders or ICDs for short. The defining feature of ICDs is failure to resist impulses to engage in a pleasurable activity that is harmful to self or others. These activities are governed by reward systems in the brain (in a way, we now think of addictions as being similar disturbances of this reward system) and include pathological gambling, hypersexuality, compulsive buying, and compulsive eating, as well as compulsive behaviours relating to medication use, 'punding' (preoccupation with meaningless motor activities; eg, arranging objects), 'hobbyism' (preoccupation with specific activities; eg, repairing machinery) and walkabout (excessive wandering without purpose). These conditions do occur in the general population but do appear to be more common in those taking cabergoline. They are thought, just like addiction, to be mediated via the so called 'meso-cortico-limbic dopamine pathway' (a brain circuit which uses dopamine as its transmitter). This pathway is a key neural circuit involved in motivation, pleasure, reinforcement, and the regulation of emotions. Given that dopamine drives this circuit, it does make sense that drugs like cabergoline could also stimulate this pathway and lead to addictive/reward seeking behaviours.

However, it is really important to appreciate that ICDs related to cabergoline occur in an 'all or nothing' type way. This means that the vast majority of people on cabergoline don't do these things a little bit more or change in any way at all but that the occasional individual will start behaving distinctly differently to how they would have done previously. Both sexes are potentially vulnerable to ICDs although men appear disproportionately vulnerable to experiencing hypersexuality form of ICD. What is not known for certain is to what extent the rise in testosterone levels that typically accompany successful treatment with cabergoline are behind this as opposed to it being entirely due to an ICD related to cabergoline treatment.

When we start cabergoline now, not only do we discuss this small risk with the patient but we also try to make sure that, wherever possible, that the patient nominates a trusted person who knows them well to monitor them for signs of this behaviour and with their permission, bring their concern to medical attention. The reason for this is that, just like in addiction, the person who is affected may try to deny or hide this behaviour. Fortunately, it seems that Impulse Control Disorders recover fully after stopping cabergoline.

Cabergoline is one of a number of medicinal drugs derived from ergot and related substances which are a product of certain fungi. These compounds have a diverse range of effects including on nerve transmitters such as serotonin, dopamine and noradrenaline. Whilst some ergot-derived drugs are used to treat such diverse conditions as migraine and haemorrhage after childbirth (by making the womb contract), others have been used to make hallucinogenic drugs such as LSD ('acid') which deliberately induces a (temporary) disconnection from reality. There is some evidence that it may have a beneficial effect on mood given its effect on increasing serotonin transmission in the brain although it is not used specifically for this.

There is some evidence that cabergoline in the very high doses (e.g. 7mg per day) used to treat Parkinson's Disease may cause fibrosis ('scarring') of heart valves. Thankfully, several studies in patients receiving the drug at the lower doses used to treat prolactinoma (typically 0.5-2 mg per week, about a twentieth of the dose used in Parkinson's Disease) have reassured us that this risk is negligible for them. Nevertheless, we typically consider doing an ultrasound heart scan (ECHO) before starting cabergoline and then every 5 years or so thereafter unless a particular patient is needing an unusually high dose even though there really is no evidence at all that there is a danger with very low doses of cabergoline.

Treatment of a prolactinoma with cabergoline is not necessarily a life-long undertaking. A significant proportion (at least 30%, possibly even as high as 70%) of people with small tumours who have been treated for around 3 years and whose prolactin levels become normal and whose tumours become very small (especially <3mm) or disappear will remain in

remission after cabergoline is tapered and withdrawn. Sometimes the attempt to withdraw cabergoline may be repeated after a further few years' treatment in those who are not 'cured' at first. Although there is some evidence that some people with larger tumours (macroadenomas) may also achieve remission after similar treatment, this is more controversial and standard practice is often to maintain treatment with the lowest effective dose for life.

Generally speaking, cabergoline is usually withdrawn at the natural age of menopause in women with microprolactinomas as the effects of elevated prolactin levels are generally no longer significant. Prolactin levels are followed up annually and an MRI may be considered if they rise substantially but for most women with stable, small tumours, there is no longer any particular benefit to be gained from taking cabergoline as periods have already ceased and galactorrhoea is less likely in the setting of lower oestrogen levels after menopause. Women with larger macroprolactinomas would however generally be advised to continue cabergoline for life.

Whilst many people with a prolactinoma may be able to stop cabergoline at some stage as discussed above, on the other hand, occasional prolactinomas may behave in a more aggressive way and not respond to cabergoline. Surgery may be required in this situation, potentially followed by radiotherapy. Even more uncommonly, a prolactinoma may continue to grow invasively even despite all the above treatments and additional drugs such as temozolomide or other agents may be required in this very rare situation.

It is always difficult when writing in detail about a drug not to make it seem like it is some sort of poison but I would honestly say that for the vast majority of people with a prolactinoma, it is a godsend that prevents the need for surgery (and associated pituitary damage), has a very high success rate and can often be withdrawn successfully after a few years' treatment (depending on tumour size). Like any effective drug it certainly can have side effects but these are genuinely uncommon, are reversible on stopping the drug and can be recognised very quickly if people are looking out for them. If only there were drugs that worked as well for all other pituitary tumours- perhaps one day!

A message about fundraising from Pat Hobbs

Dear Gail, Melissa and committee,

Bob (my husband) has just transferred £75 into the Pituitary Foundation bank account marked Solent LSG funds. This was half of the money raised by a raffle held at a Christmas Wreath Making workshop where we were taught by Sue Sheath, which was hosted by Louise at McCarthy's Bar and Restaurant in Sandown on the Isle of Wight. Also thanks go to Laura Murthwaite (my daughter) for all her hard work without which this fundraising evening would not have been possible. The other half of the money will be going to Prostate Cancer which Sue's husband is suffering from. Would it be possible for you to send me a headed letter by email thanking them so that I can print out and give to all those involved.

Many thanks Pat Hobbs

Thank you Pat and Bob for your hard work and generosity. Much appreciated.

An Interesting Read !

Your stress hormone level rises even before you wake up in the morning – Here's why

A new study has revealed that the cortisol, often known as the 'stress hormone', is already on the rise even before you wake up as the body gets ready for the day ahead. Earlier, it was believed that the level of cortisol rise just on waking up.

Researchers, led by those at the University of Bristol in the UK, found that cortisol levels increase in the hours prior to wakening as part of the body's preparation for the day ahead and so waking up may not be as "stressful" as previously thought, researchers maintained.

Known as the 'stress hormone', cortisol's levels vary through the day in sync with one's 24-hour cycle, increasing in response to stress to help the body manage it.
Waking up after a night's sleep is considered to trigger cortisol production and is termed the 'cortisol awakening response' — something that has been previously studied in varied contexts, including Post-Traumatic Stress Disorder, obesity and depression.

However, this study, published in the journal Proceedings of the Royal Society B Biological Sciences, suggests that if cortisol has any relationship with waking up, it is with the factors contributing to the initiation of awakening rather than being a response to it, the authors said.

They added that previous studies analysing the cortisol response have typically assessed saliva samples obtained after waking up, not in the period prior to this.
Consequently, the studies are not able to prove a change in the rate of cortisol secretion over the awakening period, the researchers said as quoted by PTI.

In this study, the team measured cortisol levels both before and after waking up in over 200 healthy men and women, aged 18-68 years, using an automated system.

"We found no evidence for a change in the rate of cortisol increase in the hour after waking when compared with the hour prior to waking," the authors wrote. The result suggested that any change in cortisol levels right after waking are more likely to be the tail end of the daily rhythm of cortisol — known to increase in the early morning hours and peak shortly after one usually wakes up every day, the team said.

They also found that duration and timing of sleep contributed to differences in the participants' cortisol levels and rate of change. Therefore, the authors urged caution while interpreting cortisol values taken solely in the hour after waking up.

The findings demonstrated that the major cause of changes in cortisol levels around the time of waking up are largely related to the endogenous circadian rhythm of cortisol, which is one's internal rhythm of cortisol secretion linked to body clock.

Courtesy of The Financial Express

What had to be left out

We also had a contribution of relationship rules from the male point of view, but they will have to wait until next time. Meanwhile, here is a taster:

If something we said can be interpreted two ways, and one of the ways makes you sad or angry, we meant the other one

If we ask what is wrong and you say "nothing," we will act like nothing's wrong. We know you are lying, but it is just not worth the hassle.

If you're feeling lonely or just fancy a chat, then give Gail a call on either of the numbers shown on the first page. Stay safe and thanks soooo very much for your personal contributions folks.
Gail, Pam, Howard P, Melissa, Jodie, Jenny, Jackie, Eireen & Howard C