**Chubby cheeks. Man boobs. An expanding spare tyre. Never mind doughnuts... Are your hormones making you fat?**

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While many people would be thrilled at rapid weight loss with little effort, it could point to a worrying hormone imbalance

When you put on an unexpected few pounds, it can be tempting to blame it on your hormones rather than a recent spate of takeaways.

But it may not be just a lame excuse, for experts say there are times when our hormones — chemicals that are essential for growth, development and fertility — can go haywire, leading to a change in body shape.

And, depending on which hormone is involved, it can affect where the weight piles on or falls off.

From a ballooning waistline to extra pounds all over, or a dramatic drop in weight, here’s how hormones could be the reason behind your changing physical appearance...

**FAT ALL OVER**

Struggling to shift the pounds that have slowly crept on all over your body?

Feeling sluggish, more tired than usual?

This could be a sign that you have an underactive thyroid, a fairly common condition, particularly in women (about 3 per cent of women aged 20 to 40 are affected).

Also known as hypothyroidism, it occurs when the thyroid gland in the neck doesn’t produce enough of the hormone thyroxine, which controls how much energy your body produces, among other functions.

As Dr Tara Kearney, a consultant endocrinologist at Salford Royal NHS Foundation Trust, explains: ‘It often gets missed until it’s fairly extreme because the symptoms can be vague.

'People may think they’re putting on weight because they are getting older, and blame feeling a bit flat on life not being great.

‘As it happens slowly, you often don’t notice it creeping on you over the years.’

**More...**

This weight gain is known as ‘global’, ie, it occurs all over, like the Michelin man.

Other symptoms of underactive thyroid include dry skin and hair — in extreme cases, patients may fall into a coma because it can cause the metabolism to slow down to such an extent that the brain stops working.

But Dr Kearney warns: ‘Often people come to clinic absolutely convinced they have a hormone imbalance, and when you do blood tests they are normal.’ Then you will have to take a hard look at your diet.

**MALE BREASTS**



Man boobs are generally a result of plain fat, much like having a big belly

When a man develops the kind of curves Beyoncé would be proud of, it could be down to an excess of the female sex hormone oestrogen (all men produce some oestrogen, just as all women produce testosterone).

Gynecomastia, as it is known, is most commonly a side-effect of certain drugs, such as those used to treat stomach ulcers.

Men being treated for prostate cancer may develop breasts if they are taking androgen deprivation therapy — drugs that lower levels of the male hormone.

Gynecomastia can also occur as a result of liver failure, because the liver helps to metabolise and remove oestrogen.

Sometimes newborns and pubescent boys develop breasts as a result of a rapid change in sex hormones in the body — the breast tissue responds to a temporary exposure to too much oestrogen.

‘If you have too much oestrogen and your breast tissue is not used to seeing that oestrogen it may grow a bit, then subside,’ says Dr Kearney.

It is possible to have man boobs and be otherwise normal weight.

However, if a man on the beach looks as if he could benefit from the support of a bikini but is also hefty, it is being overweight rather than hormones that is to blame.

‘Man boobs are generally a result of plain fat, much like having a big belly,’ says Dr Kearney.

**BIG BELLY, THIN ARMS AND LEGS**

Looking like a ‘lemon on a toothpick’ — with a fat middle and skinny limbs — can be a sign of Cushing’s syndrome, a condition caused when the adrenal glands (which sit above the kidneys) produce too much cortisol.

‘Cortisol is a stress hormone that helps you hang on to your calories in case you need them — in evolutionary terms this was to prepare you for battle,’ says Dr Kearney.

Typical signs of Cushing’s include a large, round face, ruddy complexion and often a pad of fat — known as a ‘buffalo hump’ — between the shoulder blades.

Exactly why fat is distributed in this way is not clear but the extra fat round the middle is emphasised by the arms and legs getting thinner.

‘You get a lot of muscle wasting on the limbs. You seem to inappropriately burn up protein despite having lots of fat to rely on — so your thin arms and legs make it look as if you have more elsewhere,’ says Dr Kearney.

People can become ‘Cushingoid’ as a side-effect of taking steroids to treat severe asthma, ulcerative colitis or rheumatoid arthritis.

Cushing’s can also occur spontaneously but this is rare, affecting only about 20 to 40 people in every million.

A deficiency of growth hormone can also cause people to put on fat around the middle and lose bulk in the arms and legs. This can occur as a result of damage to the pituitary gland (located at the base of the brain), perhaps because of a tumour or radiotherapy for cancer.

‘The most effective way of conserving energy is to put fat around the organs in the tummy, but for people with Cushing’s or growth hormone deficiency, you are storing energy at a faster rate than you are burning it off, so you get fatter and fatter,’ explains Dr Kearney.

Extra fat round the middle predisposes you to cardiovascular disease, so patients also have a higher risk of heart attacks and strokes.

**SKINNY MINNIES**



Addison's disease is a hormone-related condition that can spark weight loss

While many people would be thrilled at rapid weight loss with little effort, it could point to a worrying hormone imbalance.

One possible cause is an overactive thyroid, where too much thyroxine is produced, causing body functions such as metabolism to speed up.

This can lead to significant weight loss even though patients often have an increased appetite.

Dr Kearney explains: ‘If you’ve got too much thyroid hormone, it’s as if you’re buzzing. You can be slightly irritable, wired, sweaty and the pulse rate tends to be fast.’

Other symptoms can include gabbled speech, prominent, sticking-out eyes (caused by antibodies in the bloodstream affecting the muscles at the back of the eye) and diarrhoea.

An overactive thyroid can cause a lot of strain on the heart and an irregular heartbeat, says Professor Paul Stewart, consultant endocrinologist and Dean of Medicine at the University of Birmingham.

It is more common in women, but not as common as an underactive thyroid.

Another hormone-related condition that can spark weight loss is Addison’s disease, which is caused by a lack of cortisol due to damage to the adrenal glands (usually because of an autoimmune condition).

Addison’s affects around one in 10,000 people. As well as weight loss, patients may have darkened patches of skin, low blood pressure and can feel listless. If left untreated the disease can be fatal.

**CONCERTINA SHAPE**

If you swing between being overweight and very thin, it may be down to a viral infection in your thyroid gland, known as viral thyroiditis.

This is where a common cough and cold-type virus infects the thyroid, causing it to become overactive at first, then underactive.

‘Nobody knows which exact viruses will lead to it,’ says Dr Kearney.

She also points out that while viral thyroiditis is not common, a similar problem occurs in about 5 per cent of women who have given birth and their thyroid becomes inflamed.

They tend to go through overactive, then underactive phases and usually end up normal, although you can get stuck in the underactive phase.’

Similarly, people who are treated for an overactive thyroid after losing a significant amount of weight may end up heavier than they were to begin with.

**MID-LIFE SPREAD**

For both men and women, the ‘spare tyre’ of middle age may be partly due to a decline in sex hormones — oestrogen in women’s case, testosterone in men’s.

Both hormones are important for energy, so with decreased levels of them people can feel more tired and sluggish and put on weight as a result.

But a natural drop in growth hormone and thyroid hormone as well as slowing of the metabolism can also contribute to a thickening middle — where fat tends to accumulate anyway — as we age.

Although women experience a dramatic drop in oestrogen levels as they go through the menopause as well as a gradual drop from their 30s onwards, men don’t necessarily lose much testosterone.

‘Men do generally have a slight decrease, but a lot of their weight gain can be accounted for by the increase in body fat that occurs as you get older,’ says Professor Pierre-Marc Bouloux, professor of endocrinology at University College London.

However, he adds, there is some evidence that about 3 per cent of men over 50 develop a significant testosterone deficiency that could be treated.

‘Men with disproportionate tummy fat and symptoms of weakening erections and loss of interest in sex are worth testing for testosterone deficiency.

'But it may well be that in the majority of cases this is a result of lifestyle and weight gain — if you get rid of excess fat by exercising and eating better, it will improve the outcome and often restore normality.’

Men can also have higher levels of oestrogen simply by being overweight.

‘Fat seems to convert testosterone to oestrogen,’ says Professor Bouloux.

‘The rise in oestrogen can also switch off production of chemicals that make the testicles produce testosterone.’

**HANDS, FEET AND JAWS THAT GROW**

Richard Kiel, who played the steel-toothed Jaws in the James Bond films, has a distinctive giant-like appearance and is a classic example of the condition acromegaly.

This is caused by an excess of growth hormone, usually triggered by a tumour in the pituitary gland.

‘With growth hormone excess, everything gets bigger: hands look like spades, you’ve got big feet, a bottom jaw that sticks out, sausage-like fingers,’ says Professor Bouloux.

The hands and feet increase in size because the excess growth hormone causes soft tissue to swell.

The jaw, usually one of the last body parts to develop, will be encouraged to become unusually large if it begins growing earlier than normal.

Too much growth hormone can also cause gigantism in children.

**LONG LIMBS, SHORT TRUNK**

A lack of testosterone in adolescence can affect men’s body shape.

Testosterone deficiency can have a number of causes. It could be  genetic or, for example, a result of damage to the pituitary gland, so that it can no longer send signals to make the testes work, thereby cutting testosterone production.

‘You carry on growing but are all arms and legs, with a relatively short trunk,’ says Professor Bouloux.

‘That comes from having too little testosterone but enough growth hormone for the limb bones to keep growing.

'Spinal growth tends to be quite sensitive to testosterone production, so if you don’t have enough of it the spine doesn’t grow as it should.’

Other signs are that a boy’s sexual characteristics will remain infantile, so they lack penile growth, muscle, sexual and facial hair, and their voice will not break.

**HOW CHILDREN CAN TURN INTO BILLY BUNTERS**

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**Children who continually gorge on junk food could have a deficiency of leptin**

**Children who continually gorge on junk food may not just have picked up bad habits from their parents.**

**They could have a deficiency of leptin — a hormone produced from fat cells that helps to regulate appetite and metabolism, and tells you when to stop eating.**

**If you are leptin-deficient, you become extremely fat from an early age, says Professor Bouloux.**

**‘Children who don’t produce enough of this hormone have a phenomenal appetite.**

**'They can weigh 10st by the age of six.’**

**Much more common than leptin deficiency, though, is leptin resistance.**

**This means that brain cells fail to register the signals from the hormone that the stomach is full.**

**As Professor Paul Stewart, consultant endocrinologist at the University of Birmingham, explains: ‘Most people who are fat seem to be resistant to leptin.’**

**Blame excess sugar in the diet, says Robert Lustig, the author of Fat Chance: The Bitter Truth About Sugar.**

**High sugar levels can lead to spikes of the hormone insulin, resulting in insulin resistance, which Professor Lustig believes can trigger leptin resistance.**

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