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AN ACCOUNT OF A PARTICULAR CHANGE OF STRUCTURE IN THE HUMAN OVARIUM.

By MATTHEW BAILLIE, M. D.

From the PHILOSOPHICAL TRANSACTIONS.

(1)

TO

JOHN HUNTER, ESQ. F.R.S.

DEAR SIR,

I TAKE the liberty of requeſting you to preſent to the Royal Society an account of a particular change of ſtructure in the human ovarium. I ſhould not have ventured to have offered it to the attention of this Learned Body, if it had not appeared to be a proper ſequel to what has been already publiſhed in their Tranſactions; and if I had not been encouraged by the ſanction of your opinion, that it would tend to throw ſome light upon a part of the animal œconomy which ſeems to have been hitherto involved in a conſiderable degree of obſcurity.

I am, &c.

M. BAILLIE.

Great Windmill-ſtreet,
January 23, 1789.

AN

AN ACCOUNT, &c.

Read at the ROYAL SOCIETY, February 26, 1789.

THE ovaria in women are ſubject to a great variety of changes from their natural ſtructure. Many of theſe are exactly ſimilar to what take place in other parts of the body; but there is one which ſeems peculiar to them, the nature of which has probably not been hitherto very well aſcertained. The change of ſtructure to which I allude, is a converſion of the natural ſubſtance of an ovarium into a fatty maſs, intermixed with hair and teeth. This ſort of change is rare, although it occurs ſufficiently often to have been ſeen by moſt perſons who are very converſant in the examination of dead bodies. There are many caſes of it related in the different books of diſſections, but, as far as I have diſcovered, moſt commonly without any remarks upon the mode of formation *; or they have been conſidered as very imperfect attempts at the

* It has been the opinion of ſome, that hair, teeth, nails, feathers, &c. are animal vegetables or plants; and, agreeably to this opinion, Dr. TYSON conſiders the growth of hair and teeth in the ovarium as a *luſus naturæ*, where nature endeavours to produce ſomething, and being diſappointed in forming an animal, produces a vegetable. Vide Hooke's Lectures and Collection, N° II. p. 11 and 15.

growth of a fœtus in the ovarium, in conſequence of connection between a male and a female. This conjecture reſts no doubt on ſtrong circumſtances of probability, and yet there are many powerful reaſons which ſeem to oppoſe its being well founded. Generation is a proceſs always depending on the action of a certain cauſe, *viz.* the uſual connection between a male and a female; and, when effects ſimilar to thoſe in generation are perceived, it becomes very natural to conclude, that this cauſe has been employed. The bias to ſuch an opinion will become the ſtronger, from reflecting on the paſſions that are known to influence ſo powerfully mankind, by which the agency of this cauſe is frequently excited. When a change, therefore, was obſerved in an ovarium, by which it was converted into a fatty maſs with hair and teeth, this ſhould ſeem to correſpond ſo much with a change taking place in conſequence of generation, that the mind would ſcarcely entertain a doubt of its ariſing from the ſame cauſe, and would readily infer, that it had been preceded by a connection between the ſexes. This doubt would ſtill be the leſs, from the circumſtance of a complete fœtus being ſometimes formed in the ovarium, where the uſual means of generation had been employed. The following caſe, however, exhibits many reaſons why we ſhould be led to believe, that the ovaria in women have ſome power within themſelves of taking on a proceſs which is imitative of generation, without any previous connection with a male; and it is with this view that I proceed to relate it.

In a female child, about twelve or thirteen years old, which was lately brought to Windmill-ſtreet for diſſection, I found the right ovarium converted into a ſubſtance, doughy to the touch, and about the ſize of a large hen's egg. Upon cutting into the ſubſtance, I found an apparently fatty maſs, intermixed

mixed with hair and an excrescence of bones. This startled me very much, as I had always been led to believe, that such appearances were a sort of imperfect conception. The circumstances altogether being very singular, I was led to pay considerable attention to the change in the ovarium.

The fatty mass was of a yellowish white colour, in some places more yellow than in others, was very unctuous to the feeling, and consisted of shortened or separated particles, not having the same coalescence which the fat has generally in the body. It became very soft when exposed to the heat of a fire, and sunk into a portion of paper, on which it was spread, so as to make it more transparent. When the paper to which it was applied was exposed to the flame of a candle, it burnt with considerable crackling.

The hair with which the fatty substance was mixed grew out of the inner surface of the capsule containing it, in some places in solitary hairs, but chiefly in small fasciculi, at scattered irregular distances. Besides these, there were loose hairs involved in the fatty mass. The hairs were, some of them, of considerable length, even to three inches, were fine, and of a light-brown colour. They resembled much more the hairs of the head, than what are commonly found on the pubis, and corresponded very much in colour to the hair of the girl's head.

There arose also from the inner surface of the capsule some vestiges of human teeth. One appeared to be a canine tooth, another to be a small grinder, two others to be incisors, and there was also a very imperfect attempt at the formation of another tooth. These were not fully formed, the fangs being wanting; but in two of them the bodies were as complete as they are ever found in the common circumstances. They were each

of them incloſed in a proper capſule, which aroſe from the inner ſurface of the ovarium, and conſiſted of a white thick opaque membrane. Attached to the capſules of three of the teeth, there was a white ſpungy ſubſtance. The membrane of the ovarium itſelf was of ſome conſiderable thickneſs, but unequal in the different parts, was very ſmooth in its inner ſurface, and more irregular externally. The uterus was ſmaller than it is commonly at birth, was perfectly healthy in its ſtructure, and upon opening into its cavity it exhibited the ordinary appearances of a child's uterus at that period. The left ovarium was very ſmall, correſponding to the ſtate of the uterus. It appears clearly from this, that the uterus had not yet received the increaſe of bulk, which is uſual at the age of puberty. The hymen was entire, ſuch as is commonly found in a child of the ſame age; and there was juſt beginning a *lanugo* upon the labia, not more than what is often found on the upper lip of a boy of fifteen years old. Such are the circumſtances attending this ſingular caſe, and they preſent to the mind various grounds of conſideration.

The formation of hair and teeth is a ſpecies of generation, for in fact it makes a part of it, and ſtrikes the mind as being very different from any irregular ſubſtance which is formed by diſeaſe. This formation too takes place in a part of the body which is ſubſervient to generation, and where a complete fœtus is ſometimes formed. The whole of this looks very much as if the production of hair and teeth in the ovarium was a ſort of imperfect impregnation. But when we take another view of it, there are reaſons at leaſt equally ſtrong for believing that ſuch productions may ariſe from an action in the ovarium itſelf, without any ſtimulus from the application of the male ſemen.

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In the case before us, the uterus was as small as at birth, indeed more so, and the left ovarium (which was perfectly healthy) corresponded to the state of the uterus. It had not been at all stimulated, nor did appear capable of being stimulated by the application of the male semen. This seems to be a strong circumstance; for in a case where there was an ovum formed in one of the Fallopian tubes, the uterus was enlarged to more than twice its unimpregnated size; and, upon opening into its cavity, the decidua was observed to be formed as completely as in the impregnated uterus. This preparation is still preserved in the collection of Windmill-street. Nothing can be a stronger proof, that when an impregnation takes place out of the cavity of the uterus, the uterus still takes a share in the action, and undergoes some of the changes of impregnation. In another preparation, which is preserved in the same collection, where there was a fœtus formed in the ovarium, the uterus was increased to more than twice its ordinary size, was very thick and spungy, and had its blood-vessels enlarged as in an impregnated uterus. This becomes another very strong proof of the action of the uterus in the formation of an extra-uterine fœtus. In the case before us, however, the uterus had undergone no change, and does not seem to have arrived at that period, when it could be capable of undergoing such a change.

Besides, we are not to consider the formation of teeth in the ovarium to be a quicker process than it is commonly in the head of a fœtus; but in the present case the teeth having advanced fully as far as they are at some months after birth, this process must have begun at least more than a twelvemonth before the death of the child. If then we consider it as an impregnation, since the appearances of the child do not warrant us to believe her to have been more than twelve or thirteen years

old,

old, this brings the date of the impregnation to an earlier period than can well be believed. From all theſe circumſtances we might be led to ſuppoſe, that the formation of the hair and teeth was not in conſequence of any connection with a male, but aroſe from ſome action of the ovarium itſelf, in which the uterus did not participate. The exiſtence of the hymen, eſpecially in ſo young a girl, becomes a collateral confirmation of the ſame opinion, although much is not to be reſted on it, when taken ſingly.

It will, perhaps, have ſome influence in removing the prejudices againſt this opinion, to make the following remarks. Hair is occaſionally formed in parts of the human body, which are abſolutely unconnected with generation. Encyſted tumours are ſometimes found containing hair. Mr. HUNTER has a preparation of this ſort in his collection, which he cut out from under the ſkin of the eyebrow. This tumour was perfectly complete, and unconnected with the ſkin, except by the common intervention of cellular membrane, ſo as to have no communication whatever with the hair of the eyebrow. In this inſtance there was certainly a ſpecies of generation taking place in the encyſted tumour itſelf, forming hairs as completely and fully as in the common progreſs of the formation of a child. Such encyſted tumours have been found in other parts of the human body, and ſtill more frequently in quadrupeds. Mr. HUNTER has in his collection many ſpecimens of encyſted tumours from cows and ſheep containing hair and wool. Theſe were perfectly complete, ſo as to have poſſeſſed a power of production within themſelves, and were many of them found deeply ſeated at a conſiderable diſtance from the ſkin, which is the common parent of hair. In theſe tumours there is often the appearance of layers of cuticle, which is probably

probably a preparatory ſtep to the formation of hair. All this ſhews moſt clearly, that hair may be formed without any ſpecies of generation as it is commonly underſtood.

But hair is in itſelf as diſtinct a conſequence of generation as teeth, and as much a peculiar ſubſtance. If then the one be formed, there appears to be no reaſon why the other ſhould not alſo be formed. The action producing the one is not better underſtood than that producing the other; nor does it appear to be really in itſelf leſs connected with that ſpecies of generation ariſing from the approach of a male, ſo that teeth may probably be formed by a peculiar action taking place in the ovarium itſelf, as well as the hair.

It will tend to add further weight to this opinion, to conſider that many of the adult teeth are formed in a child after birth; and therefore their formation depends on an action taking place in the jaws at a particular period, and not on original growth. The ſame circumſtance ſtrikes more ſtrongly in the occaſional formation of teeth at an advanced time of life. Both of theſe proceſſes take place after the animal has been formed, in conſequence of a certain action being excited in a particular part of the body, and therefore there is leſs difficulty in believing that the ſame ſort of proceſs may go on in another part of the body not commonly employed in it. It ſeems reaſonable alſo to ſuppoſe, that the ovaria ſhould have a greater aptitude of taking on a proceſs ſomewhat ſimilar to generation than the other indifferent parts of the body, as they conſtitute a part of the organs which are ſo materially concerned in the real proceſs itſelf *. Theſe circumſtances, when taken collectively, would

* As the formation of teeth and hair involved in a fatty maſs may be ſaid to be peculiar to the ovaria, and as there are ſtrong reaſons for believing, that this

would ſeem to render it very probable, that the formation of hair and teeth in the ovarium does not neceſſarily depend on a connection between a male and a female (as has been the common opinion), but ariſes from ſome action within the ovarium itſelf, which is imitative of generation.

formation may take place without an intercourſe between the ſexes, it becomes difficult to account for this peculiarity in them, unleſs by ſuppoſing, that they have a greater aptitude of running into ſuch a proceſs than the other parts of the body.