SOME OBSERVATIONS
ON ONE SPECIES OF
NÆVUS MATERNUS ;
WITH THE
CASE OF AN INFANT
WHERE
THE CAROTID ARTERY WAS TIED.

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Read March 17, 1818.

THE structures of the different tumors which have been classed under the general name of Nævi Materni, have not yet been satisfactorily described. Perhaps the subsequent observations may assist in elucidating the structure of one species of the disease ; and the case which I have related where the Carotid artery was tied, may throw some light on the treatment of such tumors.

The Aneurism by Anastomosis has been accurately described by Mr. John Bell, and its character distinctly established. There is another tumor frequently confounded with it, which is entirely

confined to the skin, and to which the term *Nævus* has been usually applied. This form of the disease may with propriety be denominated the *Cuticular Nævus* in order to distinguish it from the others. But the tumor which is the subject of the present observations, and which has seldom been discriminated from the other two, is formed underneath the skin, being situated in the cellular membrane between it and the subjacent muscles. From being formed underneath the skin, I shall denominate this species of tumor the *Subcutaneous Nævus**.

§ I. *History of the disease.*

The Subcutaneous like the Cuticular Nævus is always congenital, and there is no part of the body where such tumors are not met with; though they are most frequently formed about the face.

The limits of the Subcutaneous Nævus can always be accurately determined by the touch; its form is usually flattened; and it is very moveable, lying loose upon the muscles, and not adhering to the skin until it arrives at its advanced stage. The

* It may be proper to take notice of the confusion that has arisen among French and English writers in the acceptance of the term *Fungus Hæmatodes*: the French having applied the name *Fungus Hæmatodes* to the Nævus Maternus as well as to the Anastomosing Aneurism, these two tumors being by them considered as two species of the same disease.

skin covering this species of tumor retains its natural colour until the swelling becomes prominent, when the large vessels shine through, giving the diseased mass more or less of a purple hue.

When the Subcutaneous Nævus is small, it has a doughy and inelastic feel, resembling that of a spermatocoele, and seems to have little sensibility.

The bulk of this tumor may be greatly diminished by squeezing it, and it becomes more distended when the child cries or is irritated.

Unlike the anastomosing aneurism, the Subcutaneous Nævus is not attended with distinct pulsation, but there is an universal throbbing which can be felt most distinctly on squeezing it.

When the bulk of the tumor is considerable, the blood-vessels which pass into it are usually of a very large size, rendering the removal of such a tumor by the knife extremely dangerous.

The progress and termination of this disease are various. Sometimes the tumor is very small, and never increases in bulk. Sometimes, like the Cuticular Nævus, it has been observed gradually to diminish in size without any obvious cause. In some cases there is a progressive increase in its bulk, and this is extremely gradual, the disease not assuming a serious aspect until the person be considerably advanced in life. In other instances,

particularly if the tumor be small, a process of ulceration commences in the skin, and a greater or less portion of it, as well as of the substance of the tumor itself, ulcerates and sloughs away. This ulcerated surface is finally cicatrized; and though the edges of the original tumor may still remain, yet the progress of the disease seems to be arrested, and it undergoes no alteration in future life. But in some cases this species of tumor has a formidable appearance at birth; the skin which has already become distended and discoloured, in a few days gives way, a hæmorrhage taking place which soon proves fatal.

§ II. *Appearances on dissection.*

The appearances which the Subcutaneous Nævus presents on dissection, demonstrate very satisfactorily the structure, and explain all the phenomena of the disease.

When the tumor is removed from the living body, its size is greatly diminished by the escape of the blood with which it was distended; but if it be of considerable bulk, the vessels passing into it are so large, that by throwing a coloured fluid into one or more of them, the diseased mass is distended nearly to the same size as when it was supplied with blood.

A Child was born with a very large Subcutaneous Nævus on the back part of the neck, situated

over the occipital extremity of the left trapezicus and sterno-mastoid muscles. It was of the form and size of half an ordinary orange. The tumor had been daily increasing, and I saw it on the tenth day after birth, when the skin had given way and a profuse hæmorrhage had taken place. Notwithstanding the bleeding, no diminution had taken place in the size of the tumor. It felt warmer than the surrounding skin, was very soft and compressible. Squeezed in the hand it yielded like a sponge, and was reducible to one-third of its original size. In its compressed state it looked like a piece of corrugated skin, its colour being nearly that of sound integument. On removing the hand the tumor rapidly filled, the skin again becoming purple. There was no distinct pulsation, but a violent throbbing was felt in the tumor, and arteries beating strongly passed towards it.

Conceiving the immediate extirpation of this tumor the only chance of saving the infant, I removed it as expeditiously as possible, and made the incision of the integuments beyond the boundary of the tumor; aware of the danger of hæmorrhage where such tumors are cut into. So profuse, however, was the bleeding, that though the whole mass was easily removed by a few incisions, the child expired.

The tumor having been injected by throwing coloured size into a few of the larger vessels, its intimate structure could be accurately examined.

Several of the vessels which from the thinness of their coats appeared to be veins, were of a large size, and there was one sufficiently big to admit of a full-sized bougie. This vessel is represented in one of the drawings, and is fully as large as the carotid artery of an infant *. The boundaries of the tumor appeared distinct, some healthy cellular membrane surrounding it, which was traversed by the blood-vessels. On tracing these vessels to the diseased mass, they penetrated into a spongy structure composed of numerous cells and canals of a variety of forms and sizes, all of which were filled with the injection, and communicated directly with the ramifications of the vessels †.

These cells and canals had a smooth and polished surface, and in some parts resembled very much the cavities of the heart, fibres crossing them in various directions like the columnæ tendineæ.

The opening in the skin through which the blood had escaped during life, communicated directly with one of the large cells of the tumor, and, as is represented in the drawing, the largest vessel passed directly into that cavity.

Several tumors of the same kind which I have

* See Plate VI. Fig. 2.

† See Plate VI. Fig. 3:

dissected, exhibited a structure precisely similar to that which has now been described.

§ III. *Treatment of the disease.*

The treatment of this kind of tumor has not usually been very successful. When the swelling has been small, I have already mentioned that in some instances it has remained throughout life without undergoing any alteration. In other instances it has gradually been absorbed; and in some an ulcerative process has taken place which destroyed the greater part of the tumor, the remaining portion continuing unchanged or being gradually absorbed.

Pressure and cold have been recommended by Mr. Abernethy in the treatment of Nævi; and where these can be advantageously employed, they have in many instances been useful, particularly in the Cutaneous Nævus. Extirpation by the knife has been most commonly resorted to. The operation has frequently been attended with difficulty from the situation of the tumor; but more particularly from the hæmorrhage which accompanies the operation. The loss of blood has often been so great as to produce serious consequences; and in the case already detailed, so large were the vessels, that their division instantly proved fatal. It was the unfortunate result of extirpation in the case which has been detailed, and the easier mode by

which the supply of blood to the tumor might be stopped, which led me to propose the practice adopted in the following case.

An infant was brought to London on account of a Subcutaneous Nævus on the left cheek, of a very unusual size. I saw it when it was six weeks old. The base of the tumor then extended from the temple to beyond the angle of the jaw, completely enveloping the cartilage of the ear. Its form was semispherical, the upper part of its surface being flattened from a large portion of the integuments having ulcerated. This ulcer was about three inches in diameter, its surface having a sloughing appearance and accompanied with a good deal of fætor*.

The skin on the rest of the tumor was covered with turgid vessels, and the external jugular and angular veins were greatly distended, particularly when the infant screamed, which it generally did both during the day and night at short intervals.

The tumor was soft and doughy, and its size could be much diminished by pressure. It did not pulsate distinctly, but there was a throbbing in it, and the vessels in the neighbourhood beat strongly.

This tumor was about the bulk of a small-sized

* See Plate VI. Fig. 1.

orange at birth, and had been daily increasing. The ulceration of the skin had existed twelve days, from which there had been several profuse hæmorrhages.

The infant was so extremely emaciated and feeble, that before any means for the cure of the tumor could be adopted, an attempt was made to strengthen the child by giving it at short intervals, and in small quantities, milk, beef-tea, brandy, and opium. These means had the most decided effect in restoring the vital powers, and on the following morning the infant began to suck its nurse, which it had not previously done for some time.

Though this tumor was quite moveable, and its base accurately circumscribed, yet I had learnt from the operation in the case which has already been detailed, the danger to be dreaded from any attempt to extirpate a Subcutaneous Nævus of such a size, situated in any part of the body. It therefore appeared to me, that as the extirpation of the tumor was impracticable, two important points might be gained by tying the trunk of the common Carotid artery. One of these would be, the immediate effect in arresting the tendency to a fatal hæmorrhage; the other, the reduction of the bulk of the tumor. For as from the dissection of such swellings they appeared to be composed of numerous cavities and canals through which

blood is freely circulated, it was reasonable to expect that by stopping the circulation through the Carotid artery, the flow of blood through this tumor would be interrupted, some of the blood contained in its cavities would coagulate, whilst some might be absorbed, and the cells thus collapse or be obliterated. Besides, it was to be expected that the sloughing process already begun in this tumor was to go on, and thus the disease to be ultimately destroyed. A process which, I have already noticed, nature sometimes employs very successfully for the removal of such tumors, and which probably might have been completed in this instance without the assistance of art, had not the profuseness of the bleeding accompanying the process threatened the destruction of the child.

The temporary restoration of the child's health and strength by the cordials which had been given during twenty-four hours, afforded perhaps the only opportunity which might have occurred of performing the operation; and as the opinion of Mr. George Young and Mr. Travers, who were consulted in the case, coincided with my own, by their able assistance the operation was immediately performed.

In making the incision through the integuments it was necessary to guard against wounding some large veins. The incision was made along the tracheal edge of the sterno-mastoid muscle, and

with a blunt instrument the sheath of the artery was readily exposed. By keeping apart the edges of the incision the sheath was easily slit open, the artery laid bare, and the eye of a probe armed with a small ligaturè passed under it. The ligature was moderately tightened with a single knot, and the lips of the wound brought together with a stitch and adhesive plaster.

The operation produced no change in the child's countenance, but in a very few hours there was a manifest alteration in the appearance of the tumor. It became soft and pliable, lost its purple colour, and the tortuous veins collapsed.

On the *second* day after the operation, a very remarkable change had taken place in the bulk of the swelling, and the skin covering it had resumed its natural pale colour. The ulceration continued to extend, accompanied with a good deal of fætor; but the child continued to support its strength. The balsam of Peru was now applied with pledgets of lint to the surface of the ulcer, and it had the immediate effect of stopping the process of sloughing and of destroying the fætor.

On the following day the bulk of the tumor continued to diminish; the child was entirely nourished by sucking, and its lips had become florid. There was no swelling or redness of the wound.

On the *fourth* day after the operation, the tumor had considerably increased in bulk, the integuments covering it had become livid, and the adjacent veins turgid. The inosculating branches of the temporal and occipital arteries had greatly increased in size, having become tortuous and very vigorous in their action. On the right side the pulsation of these vessels was strong; but on the left, the side where the tumor was situated, they were much more feeble. A very small quantity of blood had oozed out from the ulcer, and there was a slight factor.

After remaining without much alteration, on the *seventh* day the tumor had again evidently diminished both in bulk and in the vigour of pulsation in the arteries. The infant appeared easy, and its general health continued good.

On the *ninth* day the child slept longer than it had done since its birth. The ulceration continued to go on slowly, and the dried crust which was formed in the centre of the ulcer, and which had been considerably elevated, now appeared depressed from the process of absorption going on underneath. The bulk of the tumor had now diminished fully one half.

On the *twelfth* day, it was observed that the child's countenance had been daily improving, and the body, though much emaciated, had the

appearance of health; the skin was moist and mottled, the lips red, the bowels regular, and it continued to suck eagerly, getting no other nourishment. The surrounding vessels had become much less turgid, and the skin covering the tumor, as well as that of the ear, had acquired its natural colour. The auricular portion of the swelling had so much diminished, that the cartilage of the ear, which at one time was elevated by the tumor, had nearly fallen into its natural situation. Part of the ulcer which had rather a granulating appearance now looked sloughy. A common poultice having been applied for two days, the central portion of the tumor which appeared like a mass of hardened blood, was softened, and I removed considerable portions of it. It cut like liver, and when washed in water it exhibited a spongy structure. It seemed as if from tying the carotid artery the circulation of blood through this portion of the tumor had been arrested, and that which filled the cells had coagulated. The more rapid decay of this than the anterior portion of the tumor, probably arose from the latter being readily supplied with blood by the anastomosing branches of the submental, labial, and other arteries.

On the *thirteenth* day the child became suddenly weaker, refused to suck, and notwithstanding the use of brandy and opium in repeated small quantities, it rapidly sunk, and died on the *fourteenth* day after the operation, exhausted by the irrita-

tion of an ulcer which had now involved the whole surface of an enormous tumor *.

On reviewing the history and treatment of the two cases of Subcutaneous Nævus which have been detailed at some length, the treatment which I have employed in others, together with the structure of the tumor, it appears to me that some general rules may be given for the management of this species of tumor under all the varieties of size, form, and situation which it may assume.

Tumors of this description may be removed by the knife, by ulceration, by absorption, by tying the vascular trunks supplying them, and by ligature; these different means being employed singly or combined as may appear best adapted to the individual case.

When the tumor is small, or even of a moderate size, there is no part of the body from which it may not be with safety removed by the knife. The only circumstance which requires particular attention in performing such an operation is, to avoid cutting into the substance of the tumor; for if this be done, the hæmorrhage is violent; whereas by making the incisions beyond the diseased structure, the flow of blood is much more

* See Plate VI. fig. 1.

moderate, and so completely ceases after the tumor is extirpated, that I have never found it necessary to tie any vessels with a ligature.

Instead of removing the Subcutaneous Nævus by the knife, I have in a few cases imitated the ulcerative process already mentioned, as sometimes coming on spontaneously. I was first led to adopt this practice, from having observed many years ago the effect of a strong solution of the corrosive sublimate applied to a Subcutaneous Nævus on a child's back. In this instance, the skin ulcerated and the ulcer spread rapidly, destroying not only the integuments, but the substance of the tumor. In cases where the knife cannot be with safety used, this mode of treatment may be advantageously employed, and it may in some cases be preferred even where the extirpation of the tumor is practicable.

When a Subcutaneous Nævus is to be removed by ulceration, the process may easily be commenced by destroying a central portion of the skin with lunar caustic or kali; and when the ulceration is once begun, it goes on rapidly until the whole mass is destroyed, merely a discoloured edge being left. Should at any time the ulceration advance too rapidly, and the sore begin to slough, as frequently happens, that process may be powerfully controuled by the application of the balsam of Peru to the surface of the sore; an application

which has very successfully been employed in the East Indies in sloughing ulcers, and from which I have in similar cases derived the most decided benefit*.

But there are cases of Subcutaneous Nævus so formidable from their size and situation, that the extirpation of the tumor is impracticable; and where the hæmorrhage accompanying the ulcerative process, when such takes place, is still more dangerous. The two cases which have been narrated illustrate this observation. It is in such tumors where I would advise tying the trunk or trunks of the arteries which supply the tumor. From the result of tying the Carotid artery in the Subcutaneous Nævus on the cheek, and the effects of tying the same vessel where there was an Aneurism by Anastomosis in the orbit†, important advantages are to be expected from the operation:—these are, the diminution of the bulk of the tumor by cutting off its supply of blood; the danger from hæmorrhage being diminished, should the ulcerative process have commenced; and the rendering it practicable to remove such a tumor by the knife, the extirpation of which was previously extremely dangerous or even impracticable.

When the supply of blood to the tumor is ar-

* Asiatic Journal.

† See Mr. Travens's Case in Vol. II.

rested, an immediate diminution of its bulk will take place ; and whether the ulcerative process or extirpation is to be had recourse to for its ultimate destruction, the size may still be further diminished by forcibly squeezing out its contents, and afterwards making use of compression by adhesive plasters and bandages.

We are not yet entitled from experience to lay down any rule for deciding, whether extirpation or the ulcerative process should be preferred for the removal of such tumors. It is very probable that a child's health would be less disturbed by extirpating a large tumor of this kind with the knife, than destroying it by the more tedious process of ulceration.

How far it may be advisable in some cases to remove large Subcutaneous Nævi by ligature, I cannot from experience decide. Mr. White informed me, that he thrust a needle through the middle of a very large Subcutaneous Nævus on a child's shoulder, and included each half of the swelling within the noose of a ligature. The operation was attended with complete success.

W. Kent sculp