A Clinical Lecture

ON

TORTICOLLIS, OR WRY-NECK.

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GENTLEMEN,—To-day I wish to speak to you on torticollis, or wry-neck. There are several forms of it, and therefore it is well to define what we mean by torticollis. It is deviation of the head due to spasm, which is either tonic or clonic, of certain muscles of the neck.

VARIETIES OF WRY-NECK.

There are two chief varieties: (1) The true; (2) the false. The true form is of two types—the fixed, the wry-neck of childhood, or the congenital form; then there are the reflex, the spasmodic, and the acute forms. By taking the last first we may dispose of it at once. It is nothing but an ordinary stiff neck, which comes on, for instance, after exposure to a draught or cold, and the patient complains of pain in the neck, either very shortly after the exposure or the next morning. Acute wry-neck is an acute rheumatism of the neck, which sets up, possibly, a certain amount of temporary myositis, and is amenable in most cases to medicinal treatment, such as the internal administration of salicylate of soda and the local application of heat, and afterwards of linimentum belladonnae. In the majority of cases no ill result follows. But in the minority acute stiff neck of this kind is the beginning of that extremely troublesome form, the spasmodic wry-neck.

Other varieties of true torticollis are the reflex, the fixed, and the spasmodic forms. As to the reflex form, it is undoubtedly due to irritation, which proclaims its effect through the spinal accessory nerve. The usual causes are enlarged glands from carious teeth or other irritation. It disappears so soon as the cause of the spasm is removed.

The fixed form is primarily due to a change in the sterno-mastoid, and then to secondary contraction in the trapezius and other muscles of the neck and deep fascia; and, lastly, there are distinct alterations in the shape of the cervical spine. In the first place, one of the sterno-mastoids is shortened, so that the head assumes the position which it does when the muscle contracts vigorously. As a rule, the affection is on the right side, and the head is inclined to the right shoulder, and the face is rotated to the left. This is the characteristic attitude of congenital torticollis. Etiologically, there is no doubt that it is more frequently seen in males than in females, the converse of the spasmodic form, and it is also common in children who have been born by breech presentation. It seems that, with the after-coming head, the strain or pull upon the sterno-mastoid is productive of the deformity. It is also met with comparatively frequently in children who are the subjects of congenital syphilis; and it is well known that congenital syphilis gives rise to indurative changes in two particular muscles—namely, the sterno-mastoid and the biceps. I have seen the whole biceps in the forearm of a child one hard mass, indurated with interstitial syphilitic deposit, and quite incapable of movement. As a rule, there is not that interstitial change in the sterno-mastoid, but you find a gummatous deposit.

This deformity is not very frequent, less than 1 per cent. having been met with in the out-patient department of the Evelina Hospital.

Pathologically it is quite certain that a proportion of these children who suffer from torticollis are born with a distinct lump in the neck, which has a great deal to do with the affection. But it does not follow that every child who is born with what is a haematoma in the sterno-mastoid will necessarily have torticollis. Again, a child may be born without a haematoma or without congenital syphilis, and yet develop torticollis. Thirdly, you will find children who have a large gummatous deposit in the sterno-mastoid and do not develop wry-neck at all, and therefore it is very difficult to say what are the factors at work in the condition. It seems certain that many of the children are cases of breech presentation; cases in which

there has been a good deal of traction exercised and there has been some rupture of the sterno-mastoid fibres and haematoma. The following is an illustrative case:

H. H., aged 15 years. The history is as follows: The labour was long and tedious; instruments were used, but no swelling was noticed after birth. There was no history of syphilis. There was deviation of the head and contraction of the sternal part of the right sterno-mastoid. The child was successfully operated upon by the open method.

The next case is one of torticollis with the history of swelling of the sterno-mastoid after birth.

Rhoda B., aged 3 years, came to the Evelina Hospital. The labour was said to have been prolonged, lasting two days, and the child was finally born by the breech. No instruments were used; after birth one hour was occupied in resuscitating the child. Fourteen days afterwards the mother noticed a hard lump in the left sterno-mastoid. The case was unusual because it was the left sterno-mastoid which was affected. The lump disappeared in nine weeks, but it was observed in the second year that the head turned over. And since that time the condition steadily became worse, till he came to show the present condition of deformity. There was no history of syphilis.

The third case is one of gumma of the sterno-mastoid and wry-neck disappearing under treatment.

James W. was seen at the Evelina Hospital in April, 1893. The mother had one miscarriage before becoming pregnant with this child. This child is the third. He was ill-developed, had an earthy complexion, snuffles, and a papular syphilitic rash. On the right side there were distinct localized thickenings of the sterno-mastoid, of the thickness of a halfpenny. The temporary torticollis disappeared with the administration of hyd. cum creta, $\frac{1}{2}$ gr. twice a day for two months, and did not return.

A fourth case had congenital syphilis and contraction of the left sterno-mastoid cured by mercurial inunction.

A fifth case presented three points mentioned, namely, left torticollis, breech presentation, and a syphilitic eruption.

In a sixth case a haematoma was present, but no torticollis followed. So you see from the condition of the cases quoted that there are several factors at work, but no one is constant.

PATHOLOGY.

The pathology is very interesting. Unfortunately the *post-mortem* reports of the condition are exceedingly few, but the examinations which have been made show very distinct and definite changes. They are always of a fibroid nature, the muscular fibre being replaced by dense cicatricial tissue. It is possible that this tissue is developed either from the blood which is effused at the time of the birth in the muscle, or arises from the scarring caused by syphilitic deposit. A case which was under the care of the late Professor von Volkmann, of Halle, was very interesting, because it showed from the appearance of the muscle that the anterior and posterior fibres of the sterno-mastoid muscle had suffered, whereas those in the middle of the muscle were perfectly normal. In addition to the cicatricial changes in the sterno-mastoid, there are others—shortening of the trapezius, of the splenius, and the deep neck muscles on the affected side and the fascia; and, what is more important, there are alterations in the spine, and scoliosis starts from the asymmetry of the head and neck. You will then find that there are three curves in the spine due to wry-neck; the first or cervical is called the primary curve; then there is a long compensatory curve in the dorsal region called the secondary, and another compensatory change in the lumbar region. You can easily prove the cervical one to be the primary curve by extending the patient by the head and then you will see the dorsal and lumbar curves diminish much more than the cervical. The most fixed curve on applying extension is always the primary one. If you examine the spine in old cases of scoliosis, the vertebral bodies are found to be distinctly wedge-shaped, with the apex of the wedge pointing towards the contracted side; and the ligaments on the same side are very much thickened and sometimes ossified.

Before I speak of symptoms, it may be asked, Where should this form of torticollis be placed, if one were drawing up a list of deformities, according to the etiology? Torticollis belongs to the asymmetrical deformities. I have not yet had time to collate the facts, but for the last 15 years I have collected a large number of interesting data concerning asymmetry as shown in adults and children, and the details are very interesting. Very few people are

symmetrical. If you look at a number of people you will find in some their septum nasi is not straight, nor is the inter-palatine fissure; it is often much deflected. If you look at people's faces you will notice how unsymmetrical they are; I see many before me now. When you come to measure people's legs you obtain very extraordinary results. The greatest departures from the normal appear to be in the Jewish race, but this belongs to another part of the subject.

Torticollis is a very interesting example of asymmetry, and if you examine carefully the face of the patient with wry-neck you will notice a marked asymmetry, which is better seen in the reflection from a mirror. On taking a pair of calipers, and measuring the distance between the external angular process of the frontal bone and the angle of the mouth, you will find that the distance on the affected side is a good deal less than on the unaffected side. Sometimes it is as much as half an inch. The nose is deviated to the affected side, and on examining the head you find an equally curious change. The frontal bone falls in on the affected side, and protrudes at the opposite pole on the unaffected side. There is still another change, which is authenticated, and that is the temperature on the side of the deformity is slightly less than on the other side. It has often been debated why it is that the affected side of the face is smaller than the other side.

I believe there is a certain amount of pressure on the carotid vessels, and less blood goes to the affected side. And that is borne out by the observation made, that if a delicate surface thermometer be used the temperature on the contracted side is found to be less than on the opposite side. At any rate, there is no doubt about the asymmetry of the face; you can prove it by measurement and remove it by treatment, because within two years after you have operated upon a case and restored it to its normal condition, you find the asymmetry has disappeared. I send round the picture of a case in which the face on the side affected has become of the same size as on the other side.

SYMPTOMS.

With regard to the local symptoms, you can readily see which sterno-mastoid is contracted. You will notice in nine cases out of ten that it is the sternal head which is contracted more than the clavicular head, and also you should take the precaution to feel the other muscles, the trapezius and the splenius, and test their movements. If you do that the diagnosis will be easy. I think there is only one other condition for which it might be mistaken, and that arises from the position which the head sometimes assumes in spinal caries. It becomes fixed sometimes to one side in cervical disease, but the distinction is quite clear. It is that in cervical spinal caries it is difficult to move the head in any direction at all. In torticollis there is difficulty in moving the head only when you pull upon the contracted muscles, that is to say, mainly in a sideways direction. In spinal caries, however, the difficulty is noticed in all directions.

TREATMENT.

If the patient brought to you be an infant, and if there be a history of syphilis, it is very important that you should administer the usual anti-syphilitic remedies, and also teach the mother to manipulate the head in the opposite direction to that of the contracted sterno-mastoid muscle. Many cases are improved in this way; but if the child be brought to you some time after birth and definite contraction has set in, and if there is also asymmetry of the face, it is useless to attempt to treat it by manipulation or by supports of any kind. There is only one method of treating it efficiently, and that is by operation. It may be done in one of two ways—one which is an unsafe and unwise way, and the other which is perfectly safe. By the unsafe and unwise way is meant subcutaneous tenotomy. Until the advent of aseptic surgery the operation was always done subcutaneously. I wish to draw your attention to the structures in the neighbourhood of the sterno-mastoid which may be wounded or whose presence may cause such indecision to the operator that he may hesitate to divide the muscle thoroughly and transfix it, and so do his operation inefficiently. If you pass a knife deeply at the anterior border of the sterno-mastoid muscle you will probably wound the anterior jugular vein as it turns outwards. If you use the knife carelessly

at the outer border you may divide the external jugular vein as it turns down to join the subclavian. It is a well-known anatomical fact that a knife passed in between the sternal and clavicular heads, if passed backwards and inwards, may injure the common carotid artery. If you slant it outwards you may wound the internal jugular or subclavian veins. So to tenotomize the muscle subcutaneously is either dangerous or non-effective. The only reason it has been done formerly was because of the possibilities of suppuration. In two cases where the internal jugular vein was injured, one was fatal and the other recovered. What has happened in the majority of subcutaneous operations is that the muscle has not been thoroughly divided; the knife has been passed in at the anterior border, and for fear of wounding the subclavian vein or the jugular vein it has been passed through the thickness of the muscle itself, which therefore has not been completely severed. So the method of open division has been adopted. This is done by one or two incisions. The more common one is made about $\frac{1}{2}$ in. above the clavicle and parallel with it, so as to define the anterior and posterior borders of the muscle, and then a director is passed under it and it is divided. Afterwards you find a great gap has been made, which varies from $\frac{1}{2}$ in. to 1 in. But you have not completed your operation, because not only have you to divide the sterno-mastoid, but also the processes of the deep cervical fascia, which are contracted, and I have seen imperfect operations done by surgeons where a band of cervical fascia has been left, which stands out and does not permit the head to be properly extended, and afterwards gives rise to trouble. There is one objection to this incision, and that I have noticed commonly. However carefully you make your incision, and no matter how beautiful the place looks for four or five months after the operation, after a time the skin begins to stretch, and a scar $\frac{1}{2}$ in. wide may follow, which, especially in the case of a girl, is a serious drawback, particularly in the wearing of evening dress. I have been led to adopt an anterior oblique incision along the anterior border of the sterno-mastoid for about 2 in., and by well retracting there is ample room for thorough division. The scar never stretches but remains linear, and it is concealed in the anterior fold of the sterno-mastoid. The open method is the only rational one; it is free from danger, it is efficient, it is easy to do, and dispenses of all anxiety as to the after-result. After the operation comes the question of further treatment. Whichever way of putting up the head you adopt, you must put it up in the over-corrected position and no other. Swing it right over in the direction opposite to the deformity. A simple way of putting up these cases in over-correction is to cut a piece of house flannel to reach from the forehead over the head and down the back to the pelvis. Soak it in plaster of Paris, having previously applied linen bandages round the body and head so that the plaster shall not irritate the patient, and lay the flannel on and bandage it in position. Thus is made a simple and useful splint for these cases. Keep it on for fourteen to twenty-one days, and then remove it and let the patient practise exercises, which consist of movements of the head, so as to stretch the muscles, at the same time carrying a heavy weight in the hand of the affected side. Then for two or three months after the operation the patient should wear a cervical collar, made of either leather or poroplastic, which is useful in keeping the head in good position. The prognosis with this treatment is satisfactory, whereas after subcutaneous tenotomy recurrence is constant.

Now a few words with regard to the spasmodic form, which is an entirely different affection to the foregoing. Nobody seems to be clear as to the pathology. But evidence is accumulating to show that it is due to some form of cerebral lesion, probably due to sclerotic changes in the vessels, which have been found at the few *post-mortem* examinations made in these cases. The muscle which is primarily affected is the sterno-mastoid, but unfortunately the spasm spreads quickly to other muscles. A very common combination of muscles to be affected is the sterno-mastoid and the trapezius. But there are a number of other conditions; for instance, the sterno-mastoid on one side and the trapezius on the opposite side, or the sterno-mastoid on one side and the splenius on the opposite side; or the sterno-mastoid and the splenius on the same side. Some-

times the splenius and the complexus are affected on the same side; and there is also a definite and distinct form of spasm which is known as retrocollic spasm. The following case is an example: One day a lady came into my room and sat in an armchair. While speaking her head suddenly went back and she became rapidly cyanosed. If I had not pulled her head vigorously forward she might have died of asphyxia. She explained that she had been in danger of losing her life several times, but, fortunately, on each occasion some kind friend had been at hand to help her. In this case of retrocollic spasm there was a sudden contraction of the two splenii. You can generally tell which kind of spasm is present by careful analysis of the movements, and by noticing which muscles are affected. And you confirm your examination by feeling the hardness of the muscles when the spasm comes on, and by electrical tests.

With regard to the etiology of these cases, it is certain that in all these instances there is a distinct mind element at work. Many of them have some history of mental aberration in the family. Some have had relatives who have committed suicide, and the patients themselves have ultimately done so. In a large number the spasmodic tic, as it is called, has come on after severe shock. In a case of mine the lady's brother committed suicide. A few days after that came the failure of a bank, which caused her great monetary loss, and from that time she developed a persistent tic. Such patients go through a large amount of treatment, and there are many remedies tried, though most of them are of no avail whatever. Some do well with nerve tonics, such as valerianate of zinc, assafoetida, and so on. But it is found that after a time the effects of these drugs wear off, and the case gets steadily worse. Others do very well indeed on bromide of potash and conium for a space, and some improve on morphine; but any one who is convinced as to the nerve element in this affection will not prescribe morphine for it, as such patients are apt to become morphinomaniacs. In cases of increasing severity operation is imperative. There are several forms of surgical procedure which have been used, some of which give temporary alleviation, and others give permanent. So far as I know, you may take it as certain that it is no good dividing the affected sterno-mastoid. The spasm is not alleviated, and the patient is disappointed. The spinal accessory nerve has been attacked, and either stretched, or ligatured, or part of it has been removed. Until 1888 that was the best form of treatment known. If the spasm is very early, and if it be a sterno-mastoid which alone is affected, the other muscles being scarcely involved at all, then ligature or excision of a portion of the spinal accessory nerve will in a few cases do some amount of temporary good. But an extended experience has shown that the spasm returns, and in muscles other than those supplied by the spinal accessory, such as the complexus, splenius, and trachelo-mastoid, and therefore it became imperative to devise some method of treatment which gives better results. The credit of treating these cases by a radical method belongs chiefly to the late Dr. Gardner, Professor of Surgery at Adelaide. And at the same time as he conceived the idea Professor Keen of Philadelphia operated in this way, and I believe they published their accounts of the operation simultaneously or all but so. But it transpired that Dr. Gardner's case had been done a few days before Dr. Keen's, so priority belongs to Dr. Gardner. The operation strikes one as being severe for this condition, but those of you who have witnessed the mental agony, the distress and hopelessness, the nervous irritability and sensitiveness of these patients, will realize the terrible condition of some of them if left to themselves. The operation consists in cutting down on the posterior primary branches of the cervical nerves and removing a portion of them. An incision is carried outwards from the occipital protuberance to the mastoid process, and a second one from the latter point to the spinous processes of the sixth cervical vertebra. The flap is dissected up and turned to the middle line. The occipital artery is ligatured, and then the muscles are defined. The first one seen is the trapezius, which is divided and turned out of the way. Next are seen two other muscles—the splenius and part of the complexus. Now cut through the splenius capitus and turn the ends out of the way and retract the parts. This gives a good view of the deeper structures. The complexus is now well exposed, and a part of the operation,

which is somewhat difficult, is so to divide the complexus as to do it safely and at the same time to hit off the muscular planes. One point which I find of the greatest advantage is to separate the complexus from its vertical attachment, and this may be done with ease if you first define the inner border. Now pass your finger underneath the muscle until you feel the outer border, and separate the deep attachments of the complexus with your finger. The complexus is then easily and safely cut across. In turning the upper end towards the head you will find the branches of the suboccipital nerve which run into it, and the suboccipital triangle is seen. In the floor of it is the vertebral artery and vein and the suboccipital nerve. The vein may be very large. I have seen it as big as an internal jugular. Coming out below the obliquus inferior you see the largest nerve of all—namely, the second cervical nerve, giving off the great occipital. You can sometimes trace up a small branch of communication with the first. This is a guide to the suboccipital nerve as it emerges from beneath the vertebral artery. The posterior primary branches of the third and fourth nerves are now readily defined and their branches to the muscles. The trunks should be traced as far back as possible and $\frac{1}{2}$ in. to $\frac{1}{2}$ in. excised close to the vertebral column. An important point is to make sure that the nerve supply to the trachelo-mastoid is destroyed, otherwise recurrence of the spasm will take place.

By this operation you deprive the back part of the head of sensation and also the skin of the neck, and you break the vicious reflex circle which runs through the sensory nerves. At the same time you cut out the motor supply to the posterior cervical muscles and so stop the vicious movements. It is undoubtedly the best form of operation known for this condition.

The false form of torticollis is associated with spinal caries, and follows cicatrices of burns and wounds in the neck. It is evident that the head is displaced by reflexly irritated muscles, bony deformity, or pulled over by scar tissue, and therefore the deformity is termed torticollis, because the neck is twisted in some cases in a way very similar to that seen in true wry-neck.

WOUND OF THORACIC DUCT: LIGATURE: RECOVERY.

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SOME years ago a wound of the thoracic duct was looked upon as a very serious accident. Thus, Erichsen¹ states that "the condition may be regarded as inevitably fatal." He quotes six cases recorded by Bradley and one by Krabbel, in all of which death took place. These cases, however, had injuries to other structures which of themselves would have been serious. He also mentions a doubtful case, recorded by Kirchner, of a girl aged 9, who had run violently against a parapet fourteen days before. A litre of chyle was withdrawn by aspiration from the right pleura, and the patient recovered.

When the accident happens, however, during a surgical operation, the following case proves that the prognosis is good if suitable treatment be adopted.

A girl, aged 24, was admitted to the Royal Victoria Hospital on July 22nd, 1905, suffering from a large number of tuberculous glands on both sides of the neck. These occupied both supra-clavicular regions and the right submaxillary triangle. Those on the right side were removed on July 27th by an extensive operation, and it was thought wiser to defer the removal of those on the left till the wounds on the right had healed. Accordingly, about twelve days later, a transverse incision was made parallel to, and about an inch and a half above, the left clavicle. A large number of affected glands were found extending down as far as the pleura, to which several were adherent, and forward under the sterno-mastoid muscle. During the removal of these a sudden gush of opalescent fluid was seen to come from beneath the sterno-mastoid. This collected in the depths of the wound, and soon coagulated into a soft greyish clot. On sponging up the fluid it was found to issue from the open mouth of a vessel just in front of the scalenus anticus muscle about an inch above the inner end of the clavicle. An artery clip was applied to the open end of the discharging vessel, and the latter was ligatured with formalin catgut. The duct on the proximal side of the ligature immediately became distended, so as to form a flat, button-shaped