

a long wait to be insufficient, in which forceps were applied thrice and slipped each time, in which version was next attempted, and in which, finally, perforation of the after-coming head (which was not "after-coming") was had recourse to. In the new midwifery fewer wearied obstetricians will make their way home for a bath and a rub down after so heroic a wrestling with the powers of an abnormal labour. Again, the watching of the relation of the foetal head to the brim of the mother's pelvis, even if the latter have normal measurements, may detect a growing difficulty and lead to induction in time. So, too, in pregnancies which are apparently going beyond term, an induction not of premature but of mature labour may be the solution of a formidable problem later on. Yet again, the discovery of a twin pregnancy before labour may not increase "the gaiety of nations," but it will undoubtedly forearm by forewarning the obstetrician, and will lead the far-seeing mother or nurse to provide two sets of baby clothes. It is something to know beforehand that two presenting parts may strive to enter the brim together, and to have decided in advance which of the two shall be encouraged and which retarded.

In the fifth place, the widespread adoption of the new midwifery with its provisions will at once lessen the stillbirths rate. It has already done so. In addition to statistics from other places showing something like a 50 per cent. reduction, I was able at the meeting of the British Medical Association last July¹ to produce figures indicating a rate of 13.5 per 1,000 among 816 ante-natally supervised pregnancies, including over 100 in which there was the complication of one or other or both the venereal diseases. These cases occurred in the ante-natal department in the Edinburgh Royal Maternity Hospital during 1921. The rate for the whole of Edinburgh was 47.8. If the venereal cases were excluded the stillbirths rate fell to 5.9 per 1,000.

In the sixth place, one may confidently look for a fall in the maternal death rate due to such obstetric complications as sepsis, haemorrhage, embolism, and the like, and to the operative interference which they call for.

In the seventh place, and finally, the new midwifery will spread a sane knowledge of the risks of child-bearing and of their preventability amongst the general public. The mere existence of ante-natal and post-natal clinics and wards is an educative factor; and at the present time every woman who gets benefit from attendance at such clinics or from treatment in such wards goes forth among her sister women as an unofficial "publicity agent," to use a not very happy but easily understood expression. I wonder whether the general practitioner has grasped the full meaning of this lay propaganda and is adopting and adapting it in his own everyday work. It is well to anticipate the demand that is certain to arise.

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SINUSES AND SWELLINGS IN THE NECKS OF CHILDREN.

AN ADDRESS TO THE SUSSEX BRANCH OF THE BRITISH MEDICAL ASSOCIATION

BY

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In selecting for the subject of my address a region of the body rather than a disease I am aware that it involves speaking of widely different pathological processes, such as cystic hygroma, branchial fistula or cyst, and persistent thyroglossal ducts, as well as tuberculous glands and sinuses; but the frequency of such disorders of the neck in children seems to make the subject appropriate, and I have consulted notes, made during many years, of cases involving that region.

It would appear that actinomycosis of the glands of the neck is not very common in children. Only two cases of actinomycosis passed under my care in the thirty years I was on the active staff of the Royal Alexandra Hospital. The first formed a swelling just external to the left nipple

coming through the chest wall; the second occupied the region of the caecum. When dealing with the differential diagnosis of swellings of the neck, actinomycosis of the glands must not be forgotten. Glanders and leprosy of the glands have been recorded, but no such case has passed through the hospital. Syphilitic enlargements of the glands I have seen in babies deeply infected with that virus; the glands recover under antisyphilitic treatment more quickly than do the bone and testicular infections.

Median Sinuses.

Median sinuses in children's necks are caused by a persistent thyroglossal duct. Some few are easily cured, others are most persistent. They should cause no difficulty in diagnosis. The sinus is in the middle line, opening just below the cricoid cartilage. No tuberculous gland or sinus is found in this position. A boy, aged 8, in whom a diagnosis of tuberculous glands had been made and was sent to Brighton for sea air and sea baths before operation, was in reality suffering from this condition; he presented a swelling at this point, which burst a few days after his arrival in Brighton. It was the less serious of the two types, and ended at the hyoid bone; it was easily got rid of, and two years after had not recurred. The majority of these cases are not so simple. These median sinuses, unlike the lateral—that is, the branchial fistulae—are never congenital. They may appear shortly after birth, or may occur as late as the fourteenth year. According to Sir John Bland-Sutton, the duct originally extends as far upwards as the dorsum of the tongue, but as the body of the hyoid bone develops the duct becomes divided into an upper segment, the lingual duct, and a lower segment, the thyroid duct. In the ordinary course of development these ducts disappear, but in other cases they persist and attain a fair size. In the case I have referred to there was obviously a failure to close the thyroid portion of the duct, and so was much simpler than the case I now record.

In the early part of 1886 the late Dr. Whittle admitted to the hospital a very serious and persistent case, and he allowed me to take the notes and publish the case for him. The patient was a girl aged 5, suffering from a sinus in the middle line of the neck, opening at about the level of the cricoid cartilage. She was a fragile-looking child, and was worried by the persistent discharge of mucous fluid from the sinus. Dr. Whittle made an attempt to dissect the duct out, but he found it extended much higher than he expected, and that the probe passed to the foramen caetum of the tongue. He cleared up about three-quarters of an inch of the duct, and then tied it off, hoping it would close. In a few days it burst out again, and freely discharged the same mucous fluid. In dissecting out these ducts the operation is simplified by first injecting them with a solution of methylene blue to stain them. The child's mother removed the child from the hospital some time after, and when I last saw the patient the sinus was discharging as freely as ever. At the operation one point impressed me very much—namely, the difficulty, or I might say the impossibility, of banishing all reflex by the anaesthetic. The child was deeply under the CHCl₃, but each time Dr. Whittle held the duct in his dissecting forceps respiration stopped and did not start again until he ceased to pull on the duct. As long as he dissected around the wall of the sinus no response was seen, but the moment he pulled on the duct an immediate response was noticed.

Raymond Johnson was the first to point out that these median cervical fistulae are generally preceded by a swelling, which either ruptures or is opened by the surgeon, and it is in this stage that they are mistaken for glands.

Lateral Sinuses.

Contrasted with these are the laterally situated fistulae—the branchial fistulae. For some reason which I cannot explain I believe they are less commonly found at the present time than formerly. When I was clerking for Mr. J. H. Morgan at Great Ormond Street Hospital for Children I saw two cases, and during the first four years of my connexion with the Children's Hospital at Brighton I saw three comparatively mild cases, two being on the left side. They are said to be more common on the left side. One was easily cured by slitting up and mopping out with 25 per cent. carbolic acid in glycerin.

These fistulae are found in front of the sterno-cleido-mastoid muscle, from the sterno-clavicular articulation to the external auditory meatus. These are the first and fourth clefts, the second and third being found between these points. They extend towards the pharynx or oesophagus. The opening may be internal, external, or both. I have never met with a complete fistula. Bland-Sutton says the length of these fistulae varies from 2 to 5 cm., and are lined with ciliated epithelium, or by skin containing sebaceous glands. A case

transferred to me by Dr. Chaffey, a female infant aged 5 weeks, illustrates the multiple slips that Nature sometimes makes in developmental work. The baby had a complete cleft palate, a supernumerary auricle on the left side, and a branchial fistula on the right side. Another child aged 2, seen shortly after at the Children's Hospital, had two branchial fistulae, one in each side of the neck, which filled up for a time and then burst.

Branchial Cysts.

Passing again from sinus to swellings: a more serious affection, caused by the incomplete closing of the branchial clefts, is a branchial cyst, which may be of various kinds. Again, the trouble is more often found in the left side, and the cysts are most commonly associated with the second and third clefts. They are globular or ovoid and always fluctuate. In older textbooks a number of terms is found to describe these cysts, such as "congenital hydrocele of the neck," "cystic hygroma," and "atheromatous cyst." Later works classify these all as branchial cysts, dividing them into mucous, serous, sanguineous, and atheromatous. I have notes of several of these cysts. The first I will mention was under the care of the late Dr. Whittle, when I was house-surgeon at the Royal Alexandra Hospital. It was a fluctuating globular swelling in the left side of the neck, and was situated about the level of the third branchial cleft. It was most easily and satisfactorily removed. After Dr. Whittle had made his incision over the middle of the swelling, and was about to dissect around the swelling, the cyst protruded itself out and fell into my hand as a globular trembling bag of fluid; it was shown the same evening at the Medico-Chirurgical Society as an example of hydrocele of the neck, or serous branchial cyst. It showed no signs of a pedicle. The wound healed at once and gave no further trouble.

Cystic hygromas—or, to use the later nomenclature, atheromatous branchial cysts—are found most frequently in the sublingual region or the apex of the axilla. Those in the sublingual region may be mistaken for a ranula, but these cysts are much more serious than ranulas, and much more difficult to cure. In the neck they often become very large, and kill by pressure, or by displacing important structures. A case under Mr. Edmund Owen which I saw in 1884 in Great Ormond Street Hospital was at the root of the neck, and eventually pushed aside all the movable structures, impeding deglutition and respiration, and compressing the veins to such a degree that eyelids, hands, and arms became very oedematous. It caused death by obstructing the trachea. I have notes of two cases seen at the Royal Alexandra Hospital, but not so severe as Mr. Owen's. According to Bland-Sutton, they originate below the deep cervical fascia, but a portion may make its way through this structure and appear subcutaneously. In both positions I have known them mistaken for deep tuberculous glands or superficial gland abscesses. They are exceptionally liable to attacks of inflammation, and cases have been recorded in which the cyst has been ruptured by the child falling upon it. Their proneness to spontaneous cure explains the rarity of such cysts after puberty. They are liable to sudden increase in size, becoming hot, tender, and inflamed, and as the inflammatory symptoms subside the cysts slowly disappear. This fact should be borne in mind and the day of operation put off as long as possible. It is often impossible to dissect out the whole of the cyst. If through rapid increase in size they cause trouble by pressure, antiseptic incision, packing with gauze, and drainage may be tried.

Glandular Fever.

I have not met with a case of glandular fever in hospital practice, but during an epidemic which occurred in Bexhill and Hastings I saw a boy, aged 9, who, as he was far from robust, had been sent to Brighton for his education. He was taken suddenly ill with high temperature and catarrhal symptoms of the upper air passages.

On the second day of his illness, with a temperature of 105°, the glands suddenly enlarged to a degree I have never seen before or since. The submaxillary, superficial and deep cervical, hyoid and deep facial glands all seemed to enlarge at the same time. The swellings were very tender and seemed inclined to suppurate. The boy, who was very ill indeed, was treated with quinine and small doses of strophanthus, with local dressings of belladonna and glycerin. At night he was given a draught of aspirin and bromide to relieve pain and induce sleep. He was fed chiefly on egg and milk. The severe symptoms lasted five days and then began to abate. Eventually the boy got quite well and the glandular swellings disappeared.

If this was a case of glandular fever the source of the infection was never ascertained. The nearest point to Bexhill, which seemed to be the focus of infection, he had passed through was Newhaven.

Malignant Disease.

I have never seen a primary malignant growth in a child's neck. Occasionally such a condition has been recorded as having started in the deep cervical glands, and I have seen such sarcomatous growths in adults. Glands infected from sarcoma of the choroid spreading by way of the parotid to the deep cervical are not altogether uncommon.

Enlarged Thyroid.

This should cause no difficulty in diagnosis. Its situation in the middle of the neck and its rising with the effort of deglutition are points which separate it from the other conditions of which I have been speaking. Occasionally, but not frequently, the presence of an enlarged thyroid may cause urgent symptoms. A girl just reaching puberty slipped and fell whilst at a gymnastic class. I saw her shortly after and found the enlarged thyroid greatly engorged and causing considerable dyspnoea by pressure on the flattened trachea. Soon afterwards Mr. Berry removed the cystic portion of the gland, in which a vein had burst, thus causing the sudden increase in size. Enlarged and cystic thyroids are much more common in girls than in boys; they seem very rare in boys.

Tuberculous Glands and Sinuses.

This is a subject I have taken considerable interest in for the last thirty years, and I find I have already read five papers on it before the British Medical Association either at its Annual Meeting or at local meetings, and I need now do little more than record some general impressions and conclusions.

Adenitis, tuberculous or pyogenic, is by far the most frequent cause of swellings and sinuses in children's necks. It is, however, hopeful to remember that it is not nearly so common at the present time as it was thirty-seven years ago, when I first began to take an interest in the subject. In 1885 the gland cases admitted to the Royal Alexandra Hospital for general treatment or operation constituted 6.5 per cent. of all admissions. In 1899—that is, fifteen years later—the percentage had fallen to 3.5, and in 1910 it had again fallen. Between 1885 and 1899 Brighton had swept away most of its insanitary areas, and to the improved environment of the child, and the greater intelligence of the parents, as shown in their seeking earlier treatment, I largely attribute the improved statistics. In my address in 1899 I mentioned that I found the inherited tendency to tuberculous trouble in 80 per cent. of my cases and that in 2 per cent. they were the subject of congenital syphilis.

Lymph glands are only found in birds and mammals. In fishes, reptiles, and amphibia the thymus performs the same function. Their function is at least twofold: (1) The formation of leucocytes; they enable their cells to multiply according to the demand of the part in which the adenoid tissue is situated. (2) They protect the circulation from the entrance of micro-organisms into the blood; normally they do not permit the passage of micro-organisms into the blood, but at times, when the germs themselves are of a very virulent character, or the patient's resistance is particularly low, the glands seem to offer no resistance to the passage of the germs. I have seen several cases illustrating this apparent rule, and I would refer to a valuable paper on the same subject in the *Practitioner* of 1895, by the late Sir William Broadbent. We may take it, then, that an enlarged gland is a sign of protective reaction, whilst its absence may be a very untoward sign.

In our textbooks glands are classified into superficial and deep. I suggest a much more important classification would be: (a) glands which drain skin areas only, and (b) glands which drain mucous membrane areas. Glands draining skin areas seldom become tuberculous, though the entrance of pyogenic organisms sometimes causes them to suppurate, whilst those draining mucous membranes very frequently enlarge from tuberculous trouble. Teeth, gums, nostrils, tonsils, and adenoids are chiefly responsible for the tuberculous glands, and the skin for the acute pyogenic infection.

Occasionally a gland draining skin only, as the occipital or posterior auricular, becomes tuberculous from bacilli finding an entrance at the site of a superficial injury or of eczema, and still more frequently at the seat of an impetiginous

pustule. A child of 8, a patient in the Royal Alexandra Hospital, was accidentally scratched on the scalp above the right ear with a sharp comb, and in a few days the posterior auricular gland enlarged; it became tuberculous, and the caseous mass was removed. In the room in which the little girl spent most of her time her elder brother was slowly dying of tuberculous disease of the left lung and intestines.

Why tuberculous glands should be more common on the right side of the neck than on the left has not, I believe, been explained. I have read somewhere that dental caries is more common on the right side. The right side of the neck is generally more liable to strain. I note from my case-books that the right side was infected in 50 per cent. of the cases, left side in 27 per cent., both sides in 14 per cent., other groups in 9 per cent.

Some of the groups are much more susceptible of infection than others; the relative frequency with which they were infected in a very large number of cases was as follows:

1. Submaxillary, especially those at the angle of the jaw.
2. Upper division of the deep cervical.
3. Suprahyoid, which is really part of the submaxillary group.
4. Lower division of the deep cervical.
5. Parotid.
6. Superficial cervical.
7. Posterior auricular.
8. Occipital.
9. Internal maxillary, or deep facial.
10. Post-pharyngeal.
11. Buccal.

The first five groups mentioned in the list drain a mucous surface, and are at least fifteen times as commonly infected as the next three groups, which drain skin only. The internal maxillary, called by French authors the "subparotid glands," are the cause of retropharyngeal or latero-pharyngeal abscess, which, I may mention in passing, may be one of the most obscure troubles of children's necks. It is rare, but I fear it is sometimes overlooked as a cause of illness and death. A case was reported in the *Lancet* in 1897, from the Bristol Children's Hospital, in which a child of 5 died with high temperature and rapidly increasing asthenia. Until the *post-mortem* examination no cause for the acute illness and death could be discovered; a small abscess was then found to be occupying the position of these glands. They receive their afferent vessels from the nasal fossa, nasal pharynx, and Eustachian tube. I am not certain why they should be the least frequently affected group. I can only suggest that they occupy a position where they are less liable to be affected by strain and change of temperature.

The groups of glands most commonly affected are the submaxillary and its offshoots the hyoid glands, and the upper part of the deep cervical; these are the glands which drain the teeth, the tonsils, and the adenoid tissues of the nasopharynx. I am not prepared to say from which of these drainage areas most trouble arises, but I do say that loose teeth, carious teeth, stumps, and neglected porous gums are a very fertile source of tuberculous glands in the groups mentioned. It needs no great pathological faith to believe in the possibility of the entrance of the bacillus along the side of a loose tooth, or through the mucous membrane of spongy gums into the lymphatics, and so into the glands themselves; but if we were told that the bacillus could pass through a living pulp, down the root, and by that path reach the gland, we should not unreasonably ask for the evidence. In 1889 the observations and experiments of Dr. Kerner Hallé were published. He examined over three thousand children with swellings of the glands of the neck. In 2,334, or 78.8 per cent., bad teeth of the third or fourth degree were present in the lower jaw. More than half the teeth made responsible for the swelling of the glands had still a living pulp. Further, he narcotized dogs, laid bare the pulp of certain teeth, painted in some Prussian blue, and then closed the cavity with cement. After three days the dogs were killed, and particles of Prussian blue were found dispersed through the whole of the pulp up to the apex of the root, and also in the lymph glands. How the colour was carried was by no means certain. Lymph vessels have not been discovered in the pulp. The absorption, then, can only be by wandering cells which absorb and carry the colour, or by the intercellular stream of liquids in the tissues. Mr. G. W. Cook of Chicago found the tubercle bacillus occasionally in the saliva, but in most cases in the pulp of the teeth, or in scrapings taken from around the teeth.

Tonsils and Adenoids.

There can be no doubt that the tubercle bacillus and pyogenic organisms pass very frequently through the tonsils to the submaxillary glands, and so cause glandular swellings and abscess in the neck. It is my impression that septic tonsils are often, if not always, due to septic teeth or gums, and therefore it seems futile to enucleate the septic tonsils and leave the septic teeth. I have seen no very recent record of tonsils and adenoids examined for tubercle bacilli. The late Sir G. Sims Woodhead called attention to some experiments carried out in the Children's Hospital of Paris. Pieces of tuberculous tonsils from 61 cases were inoculated into guinea-pigs, and 8 of the animals became tuberculous. Adenoid vegetations from 35 cases were inoculated and 7 of the guinea-pigs became tuberculous—that is to say, positive reactions were found in 13 per cent. of tonsils and 20 per cent. of adenoids. Gostein, Brindel, Pluder and Fisher, and McBride and Logan Turner all record the presence of the tubercle bacillus in both tonsils and adenoids in from 12½ to 15 per cent. of their examinations. From their observations it does not follow that if the tonsils are completely enucleated the child will be saved from future tuberculous glands. Mr. Walter Spencer, in his Erasmus Wilson lectures on the pathology of the lymph adenoid structures, says that if a culture of tubercle bacilli be injected into the trachea of an animal the bacilli pass through the intact mucous membrane and infect the neighbouring glands, and that similar results have been obtained with anthrax bacilli. There cannot be any doubt about the accuracy of these experiments, but when Mr. Spencer goes on to say that it is quite the exception to see the combination of enlarged tonsils and tuberculous glands in the same patient, his experience does not agree with mine. It is a fact that in some cases of enlarged glands of the neck no enlarged tonsils or adenoids can be found, but that is not the case in the majority of patients suffering from tuberculous glands of the neck.

Treatment.

As regards treatment, I must compress my remarks into a few words. A child known to inherit the tuberculous diathesis should, as far as possible, be shielded from the exciting cause. He should live in the purest of air, take the purest of milk, and be generally well fed and well clad. He should not go into houses in which there is a case of phthisis. We should remember, too, that after an attack of measles or whooping-cough, after other specific fevers also, but especially after the two first, the child's resistance to tubercle is lower than at any other time in his life. In a previous paper I ventured to call these diseases the confederates of tubercle, so great is the danger of tuberculous glands of the neck that they leave behind them. We must not forget, too, that impetigo and suppurating ulcers of the face and scalp lower the resistance of the glands, and therefore predispose to tuberculous glands.

The local treatment should also be preventive as well as remedial. More attention must be paid to children's teeth. I believe carious and loose teeth are the first link in the vicious chain of events, that septic and tuberculous tonsils follow, and then tuberculous submaxillary and cervical glands. Enlarged glands are not always tuberculous in the early stages, but they rapidly become tuberculous, therefore treatment should be commenced at once. Treat the gums and teeth and tonsils, and at the same time let the child be out in the open as much as possible. To my mind pure air, good food, with rest and sunlight are more important remedies than any drugs. At the same time the help the pharmacopoeia offers should not be neglected. Begin treatment with alkaline bitters taken before food, and then with small doses of potassium iodide in vinum ferri, and cod-liver oil; these are remedies not to be despised. As regards local treatment, some slight help in the earliest stages may be gained by rubbing in a little colloidal iodine oil or iodex at the absorption area. In the case of enlarged submaxillary glands undoubted help can be gained by making a local application, such as Morell Mackenzie's pigment, to the tonsils or gums. If we know the spot where the micro-organisms entered we shall be wise if we follow in the same track. Glands which persistently remain enlarged, or which show signs of softening, should be excised. If very soft they may be aspirated, or a seton used, after the plan in vogue at Alton.