say, that more of them would have been inhaled. In order to test this point, the inhalation of carbolic acid was continued for two hours in three experiments with the following results:—Of the 500 milligrammes taken, there were recovered by Chandon's process 410, 400, and 390 milligrammes respectively, thus showing only a very moderate increase, quite insufficient to affect in any material manner the general results arrived at. Even had the amount inhaled been much greater, it would by no means have followed that a proportionate increase of the antiseptic was to be found in the lungs. Supposing a small quantity of any of the antiseptics really reaches those organs, it is not to be supposed that it remains there for an indefinite time, and goes on accumulating as long as the inhalation is continued. The action of the absorbents would doubtless come into play, and the antiseptic which was inhaled the first hour would become removed by absorption during the second hour. Again, it might be urged that if smaller quantities of the antiseptics were placed in the inhaler, the proportionate volatilisation would be greater. 250 milligrammes of phenol in water were sprinkled on the sponge of the inhaler, and inhalation continued for an hour, at the end of which time 234 milligrammes were recovered from the sponge, showing a smaller, and not a larger, proportionate loss.

It will, I think, now be readily acknowledged that the title of this communication was fully warranted by the facts and evidence produced; indeed, it appears to me that a stronger title would have been justified. The subject of antiseptic inhalation in diseases of the lungs is a very important one, and is by no means exhausted in the present communication. I am continuing my observations and experiments; but so far I have come to the conclusion that the most practical method of accomplishing the object in view is by means of an inhalation chamber. There are many difficulties in the way of the construction of such a chamber, and many points would have to be attended to; but the difficulties are by no means insuperable. I have already devised the plan, and am about to have the chamber constructed, so as to be in readiness for the use of patients during the ensuing winter season at San Remo.

San Remo.

ON THE REMOVAL OF A DEEP SEBACEOUS CYST OF THE NECK THROUGH THE MOUTH, AVOIDING AN EXTERNAL SCAR.

By W. J. WALSHAM, F.R.C.S.,

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SURGEON TO THE METROPOLITAN FREE HOSPITAL.

SINCE my attention was called, some ten years ago, to Langenbeck's description of deep sebaceous cysts of the neck (Dermoid or Atheromycysten des Halses), although I have constantly looked for the affection, it has but twice fallen to my lot to see an example of it: once about five years ago at the Metropolitan Free Hospital, where I helped a colleague to remove such a cyst by an incision below the jaw; and once during the last autumn at St. Bartholomew's Hospital, where I removed one through an incision in the mouth. The comparative rarity of deep sebaceous cysts of the neck, and the facility with which I was enabled to remove the whole cyst through the mouth, thus avoiding an external scar, are my reasons for drawing attention to the subject. Sebaceous or atheromatous cysts, says Langenbeck,¹ apart from their frequent occurrence in the scalp and skin, are only found deeply seated in the region of the neck and throat, sometimes under the superficial fascia, sometimes deeper, having attachments to parts of the larynx or pharynx or to the carotid sheath. They appear as tumours of a globular or ovoid shape, with a smooth and even surface, and are tense and elastic to the touch; whilst, with one finger in the mouth and the other pressing upon the swelling in the neck, fluctuation can be distinctly felt through them.

In several of the cases referred to by Langenbeck a transmitted pulsation of the carotid artery was felt on extension

of the head; but in these cases the cysts had an intimate connexion with the sheath of the great vessels, and most of them were contained in the superior carotid triangle. In both the cases I have seen the growth corresponded with Langenbeck's description, but in neither did I detect any transmitted pulsation from the carotid artery, nor discover any connexion with the carotid sheath, but then they were situated almost entirely in the digastric triangle. Both appeared globular, and to have only superficial attachments; but at the operation for their removal deep ramifications were found extending amongst the muscles of the tongue and hyoid bone. That at the Metropolitan Free Hospital occurred a little below and in front of the angle of the jaw, and extended down the neck to above the level of the hyoid bone. It appeared to be about the size of a Tangerine orange, was freely movable, and fluctuation could be felt through the mouth. On removal deep prolongations were found running in several directions, one as far forward as the symphysis, and others amongst the muscles of the tongue. Notwithstanding these it was fairly easily shelled out with the finger leaving the various structures forming the floor of the digastric triangle exposed to view. The cyst that I myself removed occurred in an unmarried woman thirty-four years old. She had first noticed a swelling under the jaw about five years ago, and it had since been growing gradually larger. She was certain that it had not existed longer than that time. On admission the swelling was about the size of an orange, and situated in the right side of the neck, extending downwards into the neck for about two inches, and upwards into the mouth. It was globular, circumscribed, apparently freely movable, non-adherent to the skin covering it, which was normal, moderately tense, smooth on the surface, and giving no pain when handled. On pressing it upwards from the neck, it could be made to project prominently into the mouth, where it could be felt reaching from the base of the right anterior pillar of the fauces to the symphysis. Fluctuation, with one finger in the mouth and the other on the neck, was readily perceptible. I was unwilling to remove it by an incision in the neck, feeling sure from former experience that notwithstanding that it felt freely movable and circumscribed, it would have deep connexions, and therefore that the wound, considering the laceration and bruising of the tissues which would necessarily ensue, could hardly be expected to heal by the first intention. I was anxious, the patient being a woman, and of not unprepossessing appearance, to avoid a scar. Langenbeck's experience of tapping or incising these cysts, moreover, was not encouraging. In one case treated by incision the cyst filled again and again for four years. Mr. Willett, who kindly saw the case with me, thought that it might be removed through the mouth, and considering the ease with which the former cyst, in spite of its deep attachments, shelled out, I determined to make the attempt. The patient having been brought under the influence of chloroform, a gag placed in the mouth, and the tongue drawn over to the left side, an incision was made in the floor of the mouth from opposite the last molar tooth to the symphysis, and the sublingual gland having been turned to one side, the wall of the cyst was exposed. The capsule was opened, and the cyst separated with the finger quite easily from its posterior, external, and anterior connexions. On its inner or deeper aspect the enucleation was less readily accomplished, several prolongations extending among the muscles of the tongue and hyoid bone. In freeing the deeper parts the cyst wall, which up to this time had remained unbroken, was ruptured at its upper part by coming into contact with the teeth. After evacuating the greater part of the contents (pseudo-sebaceous or porridge-like material), carefully preventing any from entering the wound, the whole cyst, with its deep ramifications, was completely removed. There was no hæmorrhage; the wound therefore was not plugged, but only a small piece of oiled lint placed in it superficially to prevent its closing, and a bandage applied to the neck so as to make gentle pressure upon its deeper parts. With the exception of a sharp rise of temperature on the morning after the operation, which rapidly subsided on removing the lint from the wound, the patient convalesced without a bad symptom. The wound was syringed out hourly with a weak solution of carbolic acid (1 in 100), and gentle pressure continued on the neck by means of a bandage. It completely healed in a fortnight, and the patient was discharged at the end of three weeks without a trace of any external swelling in the neck.

The origin of these cysts would seem involved in some

¹ Archiv für Klinische Chirurgie, Band i., 1860, p. 1.

obscurity. In several of the cases quoted by Langenbeck and Gurlt they were attached to the carotid sheath, from or in which they are believed by Langenbeck to grow. In most of the cases the cysts appear to have existed a long time, and in some to have attained a large size. One cyst,² which began below the lower jaw, and at first was no bigger than a hazel nut, in ten years grew so large that it extended to the clavicle. In neither of the cases under present consideration had the cyst any connexion with the carotid sheath, nor, as far as I could determine, with either the larynx or hyoid bone. For my own part, I should regard such a connexion rather as accidental—i. e., that the sheath of the vessel or other structures had merely become involved in one or more of the outgrowing processes of the cyst as the latter increased in size and depth. If such be the case, it is a point in favour of their early removal, for in some of the published cases the cyst has been found so intimately attached to the sheath of the great vessels that its removal has involved the excision of an inch or more of the jugular vein; or, in consequence of its relation to the artery itself, the operation has had to be abandoned. Although no general rule of practice can, of course, be drawn from the experience of a single case, I venture to suggest that where, as here, the cyst is freely movable, and can be made easily to project into the mouth, removal through the mouth will be found the best method of treatment. It may, of course, be objected that such a proceeding involves a deep wound with no depending opening, and that it must be attended with considerable bruising and laceration of the surrounding tissues. I think, however, if pus is prevented from collecting in the deep parts of the wound by maintaining a free opening into the mouth, by frequent syringing, and by applying well-regulated pressure to the neck, that, considering the vascularity of the parts, no difficulty need be apprehended in the rapid healing of the wound. The avoidance of an external scar in the removal of such growths is alone, I think, sufficient to render this method worthy of further consideration.

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THE POISON OF THE VIPER, AND PERMANGANATE OF POTASH.¹

By DR. GIUSEPPE BADALONI

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[DR. BADALONI commenced his paper with a short historical sketch of the investigation of the viper poison, from the days of Francesco Redi downwards. Having described the poison apparatus of the viper, he passed on to the chemical nature of the venom, and quoted the analysis of Prince Louis-Lucien Bonaparte, made in 1843, comparing it with Professor Weir Mitchell's analysis of rattlesnake poison, in 1861, as follows:—

Viper poison.

Echidnin or viperin, the active principle; a yellow colouring matter; a substance soluble in alcohol; albumen, or mucus; fatty matter; chlorides and phosphates.

Rattlesnake poison.

An albuminoid body, croctalin (the active principle); an albuminoid substance coagulating with heat; a colouring matter, and an undetermined substance, both soluble in alcohol; a trace of fatty matter; chlorides and phosphates.

Echidnin, according to Prince L. L. Bonaparte, had the appearance of a gummy varnish, being inodorous, glistening, and transparent. It detached itself from the watch-glass, when dried, in brilliant scales like those of tannic acid. It was inodorous and without definite taste; it did not redden litmus or turn syrup of violets green; it evolved ammonia when heated with caustic potash; it acted on the blood of animals in the same way as the natural poison; mixed with human blood it darkened its colour and arrested coagulation. The mode of action of the poison on the economy was to exercise a depressing influence on the nerve centres and

on the heart. Dr. Albertoni, of Genoa, in 1879, had formulated from his experiments the following results: (1) There was a close relation between the severity of toxic phenomena, the rapidity of the fatal ending, and the blood pressure. (2) When the blood pressure was reduced to about 50 mm., death followed in a few minutes. (3) The blood pressure was always lowered by the action of viper poison. The post-mortem appearances—the multiple hæmorrhagic and inflammatory congestive lesions of the more active and vascular tissues—might be ascribed to the depressed nervous action, or perhaps to the slackening or arrest of the circulation. In 1879 Dr. Jean Baptist de Lacerda, vice-director of the Physiological Laboratory in the National Museum of Rio Janeiro, announced the discovery of organised ferments resembling bacteria in the poison of serpents, and recommended alcohol as an antidote. These organisms Dr. Badaloni had failed to find in viper poison, and on treating the poison with alcohol for twenty-four hours he found its activity in no way diminished. Alcohol, too, had been used by Prince Bonaparte in preparing the echidnin, which possessed all the properties of the viper poison. In 1881 Dr. de Lacerda, abandoning the bacterial view, stated the poison to be a digestive juice analogous to the pancreatic secretion, though far more powerful; and the subcutaneous injection of permanganate of potash in a 1 per cent. solution to be the true and only means of counteracting it. These conclusions, supported by forty experiments, were made public on July 20th, 1881. “The rapidity of the neutralising action of the substance employed as an antidote,” Dr. de Lacerda said, “showed itself not inferior to the rapidity of the disturbing action of the poison.” In 1882 the same author published a pamphlet containing a series of clinical cases, to the number of forty, in support of his experimental results. The permanganate, he stated in a circular dated Aug. 1st, 1881, should be injected subcutaneously if the poison had been absorbed by the lymphatics from the connective tissue, and into the superficial veins if it had penetrated directly into the circulation. The requisite indications would be afforded by the relative rapidity and intensity of the general and local symptoms. A bandage should be tied above the wound immediately on the accident, and three or four grammes of the 1 per cent. solution injected, if possible in the track of the puncture, stimulants being given meantime to counteract the general depression. To the action of the poison, as described above, Dr. Badaloni said the permanganate was not a *physiological* antidote. Its effects, if any, must be due to its chemical action on fermentative substances. Dr. Badaloni then detailed his own experiments with the permanganate, which were as follows:—]

First Experiment (Sept. 15th, 1881).—3 P.M.: I took a large and mature *Vipera aspis* just behind the head, and, bringing it against the left side of the upper lip of a large rabbit, made it bite. A few drops of blackish blood oozed from the wound. I made it give a second bite in the middle of the left front paw. After ten minutes I observed the development of toxic phenomena—viz., drowsiness, which quickly passed into somnolence, and slight dilatation of the pupils. A little later a slight degree of meteorismus presented itself, and the head, as if left to itself, fell on one side as though the animal were oppressed by deep slumber. After fifteen minutes of this pathological condition I made an injection with a Pravaz' syringe of a gramme of the solution, inserting the needle into the areolar plane above the right shoulder, close to the neck. The rabbit seemed little relieved and soon fell into a lethargic state anew. After the lapse of twenty minutes more I made it walk, but it did not keep its feet and fell. A fresh injection of a gramme. No amelioration; on the contrary, after ten minutes, extreme dilatation of the pupils, followed by convulsions, violent though very short, and death. Although the antidote was not injected in the actual seat of the wound, yet in thirty minutes it should have been able to act on the poison and prevent death. An hour later Dr. Walter Battistini, veterinary surgeon, made the post-mortem examination, from which I quote the following:—Heart dilated, flaccid, free from clots. Blood dark and very fluid, slow to coagulate. Hyperæmia of the mucous membrane of the stomach with a number of submucous hæmorrhagic puncta. Intestines, especially the small, extremely injected, with hæmorrhagic puncta. Mesentery the same. Lungs, liver, spleen, and kidneys normal. With electricity, contraction of all the muscles.

Second Experiment (Sept. 23rd, 1881).—4.16 P.M.: The same viper used on the 15th was applied to the right side of the upper lip of a large and healthy rabbit. Anal

² Nægele: Brünninghausen, Ueb. d. Exstirpat. d. Balggeschwülste am Halse (s.s. 239), s. 51.

¹ Communicated to the Medical Society of London, in an English Translation, on April 16th, by Dr. Isambard Owen.