Pathological notes / by P.S. Abraham.

PATHOLOGICAL NOTES.

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BY M.D.

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SELF-MUTILATION IN A LIONESS.

[Read in the Pathological Section, February 13, 1885.]

On the 18th of May, last year, a fine lioness in the Zoological Gardens, in Phœnix Park, was discovered to have devoured, during the night, some six inches of her tail—the hair, skin, bones, and everything. She did not then touch it for some days, but appeared to be very restless, and on the 27th of the month she recommenced her extraordinary conduct, and demolished, during the night, a great part of the remainder of the organ. She then rested awhile, but again went at it, and at the end of a month there was nothing left of her caudal appendage but the "butt," some four inches or so, which I here exhibit. The organ was now so short and un-come-at-able that she could not reach it with her mouth, and it was hoped that in consequence she would resume her usual tastes and be satisfied with the flesh of other animals; but on the 1st of July she began to lick and gnaw off the skin of the dorsum of the right hind paw. The integument and subjacent tissues are seen to be removed from nearly the whole of the extensor surface of the foot, and it is evident that the tendons would be exposed were it not for the granulation tissue which has formed, as a superficial layer, over them. It was quite certain that while all this was going on the animal suffered extreme pain; the stump of the tail was seen to be in a constant state of quiver, and when a part of the foot was gone, the leg was drawn up, and the creature limped about the cage on the other three legs.

There was nothing apparently to account for this strange behaviour on the part of the lioness. She was in splendid condition, as

regards her fur, flesh, and appetite, and her excretions were normal. It is needless to say, various methods were tried to induce her to leave herself alone—complete change of food, sulphur and other aperients, syringing the parts with bitter liquids, &c., but all with no effect. At last, indeed, it was deemed advisable to destroy her, for her suffering seemed so great, and the extent of the wound on the foot was so large, that, even if she left off the bad habit, it appeared impossible that the raw surface could ever properly heal and skin over.

At an examination of the body, made shortly after death, I found the thoracic and abdominal organs all perfectly normal; the right ovary was larger than the left, and its surface presented several large protrudent Graafian follicles. At first I was inclined to think that this ovary presented some abnormality, but after consultation with Dr. Neville, and on its microscopic examination, I have arrived at the conclusion that, beyond some degeneration, it is the seat of no very great pathological change. The brain and spinal cord were not examined.

The lioness, who was about twelve years old, had been in the gardens for five years, and had always been in good health. She had produced cubs three times, but her offspring were, with few exceptions, unhealthy, mostly becoming rickety and dying young. For one year previously to May, 1884, she had not been in "season," although formerly she had been tolerably regular in "coming round," as the keeper called it.

It is well known that foxes and many other animals when trapped by one foot will sometimes gnaw themselves free and leave a portion of their bodies behind; and a gradual gnawing and picking away of the tail has also been observed as a not uncommon habit in monkeys in confinement, as well as occasionally in rats, dogs, and several other creatures. The present case, however, does not come under precisely the same category as these; for there appeared to be absolutely no external cause for the procedure, and instead of a gradual gnawing and disappearance of the organ, large pieces were scrunched off at intervals and swallowed. I have made a great many inquiries as to similar occurrences in

other zoological gardens and menageries, and I here take the opportunity of thanking several superintendents and others, some of whose names are mentioned below, for the information which they have been kind enough to give me. The distinction pointed out above does not seem to have occurred to my correspondents, many of whom have mixed up the cases of gradual gnawing with those more nearly like that of our lioness.

As far as I can find out, the only instances of self-mutilation which had previously occurred in our own gardens, were in (1) a female hyæna, who devoured her tail some years ago; (2) a female wolf, who fed upon one of her legs, and had to be destroyed; and (3) a female jaguar, who ate a good half of her tail, which had been injured by the claw of her neighbour, a tiger, over whose cage she was kept. One day, unfortunately, she let down her tail between the bars, and the tiger made a stroke at it; she ate the fragment, which was hanging by a little skin and tendon, but did not further interfere with the stump. This last case, indeed, is not exactly comparable with the others.

A keeper at the Zoological Gardens in London has informed me that some three or four years ago a young female cheetah, scarcely full grown, commenced suddenly to eat her tail. She would bite off two or three inches, then stop for a few days, then become excited and set to work again. This went on for some weeks, her excitement during the time being very great, and she frequently gave loud screams. Finding no improvement, she was destroyed. An old female hyæna, who had never bred, also some years ago at the London Gardens demolished her tail. She would wait till the stump was nearly healed, and then make another meal off it, until ultimately the whole organ disappeared.

Mr. Jackson informs me that the only case which has occurred at the Clifton Gardens was that of a lioness, a piece of whose tail had been bitten off by a neighbouring tiger. She kept the wound open and sore for two or three months, after which it healed over, and she subsequently became a good mother. This also is not quite in point.

M. Hüet, of the Jardin des Plantes, writes that such occurrences

have sometimes happened in the case of leopards, lions, and smaller carnivora, and that they are especially common among the monkeys of that collection. He considers the habit due to a disease of the skin, which can be sometimes cured by treatment.

The late Dr. Bodinus, Director of the Berlin Zoological Gardens, had often observed animals of prey gnawing their tails and nibbling themselves; and he held that the bad habit has its origin in a faulty state of the blood. He recommended, therefore, a change of diet, such as from horse-flesh to young veal, and castor-oil in milk, also local applications, carbolic solution, tincture of aloes, &c. He stated, however, that it is very difficult to prevent wild animals from knawing themselves when suffering from pain. He had nevertheless been quite successful lately with a young female jaguar who was eating her tail.

M. Herman, Director of the Amsterdam Collection, has only met with one instance of anything of the kind, in an experience extending over forty-six years. This was in the case of a rhesus monkey, "which, becoming mad, began to eat its forehands."

At the Antwerp Gardens no carnivore has ever attacked its tail, unless that organ had been wounded. More than once an animal has shown a tendency to constantly lick the tail, but a good dose of sulphur has removed the irritation. The monkeys, however, have frequently eaten their tails, and nothing but amputation of the organ has stopped them.

Mr. Jamrach has several times met with such cases among leopards and lions, and, of course, often with the monkeys. He ascribes the cause to be either a healing wound or an irritation of the skin, the intolerable itching developing into a mania. He states also that parrots frequently eat their feathers and flesh.

Mr. Salva, of Cross's menagerie, has frequently observed carnivorous animals mutilating themselves, especially among those which are suffering from scrofulous sores. He considers the only successful treatment to be by amputation of the injured limb.

Through the kindness of Mr. Snow, of the Phœnix Park Gardens, I have recently seen a letter from Mr. Carpenter, animal dealer, of Liverpool, who writes of a young Bengal tigress—"I had a letter

last November (from the present owner) saying the tigresss was very fine, but had a habit of dropping its tongue out and rolling it about a good deal; and a few days later I received a letter saying that it had eaten the whole of its tail off." This animal had never bred.

Lastly, Mr. F. Collins informs me that many years ago he knew of a lioness in Wombwell's menagerie who devoured her tail.

It will be observed that several of my informants ascribe the morbid appetite to some irritation of the skin; and, no doubt, this may account for the gradual disappearance of the tail in the case of monkeys. A sore may be originally formed on the tip, and, when the itching of healing begins, the scab is picked, licked or gnawed off; the newly rawed surface again heals over, again to be denuded; and this may go on till the organ at last is all gone. Of course a continuous licking with the prickly feline tongue will soon produce a sore, but it seems unlikely that this or the other suggested causes will account for an animal suddenly munching off large pieces of its person. On the whole, I am inclined to consider that this departure from the creature's usual habits is due rather to something akin to a mental derangement; and I think that M. Herman is probably right in saying that his rhesus had "gone mad." My inquiries tend to show that the carnivores which have "taken on" in this way have been nearly always females, which have been either very young, just before they began to breed, or old, at the menopause, when their breeding period had come to an end; and I venture to suggest that we may look upon this perversion of taste, in our lioness at all events, as one of the manifestations in the lower animals of that protean affection which we call "hysteria."

ON TWO SPECIMENS OF SARCOMA OF THE LOWER JAW.

[Read in the Pathological Section, May 15, 1885.]

At the request of Dr. P. C. Smyly, I exhibit to the Pathological Section the accompanying two specimens of new growths of the lower jaw.

The first was excised from an army veterinary surgeon, aged twenty-five, who for six months before operation had complained of severe pain and increasing swelling of the lower jaw. The symptoms commenced while he was on service with his regiment in India, and they were at first ascribed to the constant champing of the chain-strap of his helmet. The acute pain, however, did not subside, nor did the enlargement cease to increase when the supposed cause was removed; and as the diagnosis of a tumour implicating the bone became evident, excision of the jaw was recommended. The operation was effected under ether. The growth was accompanied by no glandular enlargement. It appears to have been completely removed on the right side, but the cut surface of the bone on the left has not a healthy appearance. The specimen shows that the neoplasm occupies the substance of the mental part of the inferior maxilla as far back on the right side as the second bicuspid tooth, and on the left side as far back as the first molar. It has expanded the bone forwards, downwards, and backwards, forming a tumour (7 cm. in vert. diam., and 5 cm. in ant. postr.), which must have been felt in front and below the chin, as well as within the mouth beneath the tongue. The surface shows some irregular lobation, and it seems to have been encapsulated by the surrounding expanded tissues.

A clean vertical cut has been made nearly through the middle, and, meeting without resistance, proves that in this situation the

bone has practically disappeared. The section exposed a firm, fibrous-looking structure, with a large irregular central cavity.

Microscopic sections exhibit the anatomical structure of sarcoma, the mass of the growth being made up of connective tissue cells of embryonic type. They are, for the most part, spindle-shaped, but they are often rounded, or sometimes irregular; and an intercellular matrix is occasionally well developed. At various spots throughout the sections, the remains of bony spicula have been cut across, as though the new cellular growth had expansively separated, as well as absorbed, the bony lamellæ.

A section taken through one of the lobes which encroached on the gum inside the mouth presents the same characters; but it also exhibits some hypertrophic development of the epithelium, and some neighbouring collections of inflammatory small cells.

The pathological question arises as to the source of origin of the cells of this sarcoma. Have they their parentage in the cells of the osteogenetic periosteum, from the internal medullary cells, or from the minute protoplasmic elements which, as bone cells, occupy the lacunæ of the bony substance, or are to be found along with the vessels and membranes which traverse the Haversian canals? in the present state of knowledge it appears to me to be impossible to give a definite answer to this question. It has been proved by experiment and observation that, in a certain sense, "irritation brings bone back to an embryonic condition," that the first effect is an absorption of the osseous tissue, and that this is closely followed by a new formation of bony trabeculæ, so that the ultimate result may be a dense and thickened bone. Suppose, however, that this accompanying ossification be arrested, that the multiplying cells in place of acting as osteoblasts, grow quickly, increase in number rapidly, and keep on their primitive character, we should have just such a growth as the one now under consideration—a true sarcoma, studded with the vanishing remnants of the old bone. The rapid growth of this tumour, its homogeneous soft texture, and the complete absence of large plates of the old bone, as well as its microscopic characters, all seem to me to point to such an interstitial mode of origin.

The disease returned in a short time in the left side, and grew rapidly. This was removed at the articulation, and the wound healed readily; the other side was quite healthy. On the 8th May there were further signs of disease between the larnyx and œsophagus, and extending towards the floor of the mouth.

The second specimen is also a tumour occupying the front of the lower jaw. The case is that of a lady, aged thirty-five, who had noticed the growth for one year. In consistence it is very hard, and portions, for microscopical examination, could be sliced out only with difficulty. The sections exhibit the appearance of an ossifying sarcoma; in many parts, however, the cells of the matrix have assumed an "adult" character, and these portions resemble rather a young fibrous tissue. The bony trabeculæ are well developed, and off-shoots of bone extend outwards, as though from the periosteum, towards the integument of the chin. That the seat of origin of this growth is in the periosteum appears to me, indeed, not improbable. While the first described tumour may be regarded from its structure as a growth of highly malignant character, this may be considered an example of one of those slow-growing sarcomata which clinically closely approach the innocent tumour.

In this case there has been no return, and the wound is perfectly healed. There was a small abscess under the chin, about the fifth week after operation.

NOTE ON TUBERCLE OF THE TONSILS.

[Read in the Pathological Section, May 15, 1885.]

THE specimens exhibited are the enlarged tonsils of a young woman, aged twenty-eight, which were excised within the last three months by Dr. P. C. Smyly, who informs me that the patient was unmarried, had a strumous appearance, and swollen glands in the neck, but no symptoms whatever of lung disease, cough, or any affection of the palate or fauces. She suffered from repeated slight attacks of tonsillitis, but there was never suppuration. For some months before the operation the tonsils had become so enlarged, meeting in the middle line, that the throat was nearly occluded, and only small quantities of fluid could be swallowed with difficulty. The wounds caused by the operation healed readily and without trouble.

The right gland, which is rather the larger, is attached by a narrow base. It is roughly ovoid in shape, and measures 4·5 cm. in length, and about 3·5 cm. in its thickness and in its width. The surface is marked by indistinct lobation, and several fissures and pits are seen to lead into the depth. It was smooth, and of pale pink colour in its recent state. A longitudinal incision made into the substance exhibits a few deep crypts enlarged at the bottom, and much solid hypertrophied tissue between them. Some spots of the latter were yellowish, and softer than others, from apparent commencing caseation, and some cheesy detritus also partly occupied some of the crypts.

The microscopic sections show—(1) peripherally, many hypertrophied and succulent epithelial layers; (2) hypertrophied lymphoid follicles, which with (3) make up the mass of the growth; and (3) a loose, irregular cell growth, situated chiefly between the latter, and markedly characterised by the presence of well-developed multinuclear giant cells—a tissue, indeed, which differs

in no essential point from that of ordinary tubercle, as found elsewhere. In some places the centre of a follicle is occupied by a giant cell, with a loose zone of young connective tissue cells immediately around it, and in other parts the cells are evidently undergoing caseous degeneration. A few sections were stained by Gibbs' method for bacilli, and although there is some doubt, possibly in consequence of understaining, I believe that the bacillus tuberculosis is demonstrable in the giant cells, and especially in their nuclei.

The sections taken from the tonsil of the other side present all the same characters.

Although some authors admit that a connexion has been observed between enlarged tonsils and the strumous diathesis, in the principal British works on diseases of the throat no allusion whatever is made as to the possibility of the tonsils ever being the seat of tubercle. Wagner, in Von Ziemssen's "Cyclopædia," incidentally mentions tubercle of the tonsils as occurring with tuberculosis of the soft palate; and he states that it only occurs simultaneously with advanced tuberculosis of the other organs, especially of the lungs, &c. Some pathological authors, however, do recognise its existence, although, as far as I can discover, the occurrence of tubercle primarily in the tonsil is nowhere particularly noted.

The adenoid tissue of the lymphatic glands is, we know, a favourite site for tubercle, with its resulting caseation; hence, we might, *a priori*, expect it sometimes to appear in and among the lymphoid follicles of the tonsil. The present specimen seems to me to be an example of such a condition; and it may be predicted that tubercle will again, occasionally, be found in this situation, when the habit of microscopically examining all excised tonsils shall have become more general.

DESCRIPTION OF HEART WITH INCOMPETENT AORTIC VALVES.

[Read in the Pathological Section, December 5, 1884.]

The cavities of the heart on both sides are dilated, and the walls are everywhere hypertrophied, but otherwise apparently healthy. On the right side the auriculo-ventricular valves are normal, and the only lesions observable in the semilunars of the pulmonary artery are a slight thinning in one of the cusps, and a reddish thickening in the corner of another—viz., the left anterior cusp. The inner surface of the pulmonary artery is of a remarkably deep purple colour. On the left side one of the mitral cusps presents some thickening at its edge, but, like the valves on the right side, there is no evidence of incompetency or of stenosis. In the left ventricle, near the aortic opening, there are some spots of commencing atheroma. As on the other side, both the cavities contained *post mortem* clots.

On pouring water into the aorta its ventricular orifice was found to be widely patent, and, before splitting up the vessel, the finger could distinguish a very abnormal condition of affairs. The valve seemed thick, rough, and frayed; a hole of considerable size could be determined in one place, and just above and behind this a hard nodule, and a cavity below it, could be distinctly felt.

The vessel was then laid open from the ventrile, and the appearances within it are as follows:—Bulging patches of atheroma—not advanced to calcification—are extensively deposited in the ascending arch, and a few smaller patches lower down opposite valve, and on the bottom of the sinuses of Valsalva.

Between the openings of the coronary arteries, and at their level—*i.e.*, nearly at the point where the anterior segment and the left posterior segment of the valve should meet, is situated an ovoid mass of bony consistence, measuring 9 mm. in its longest,

and 7 mm. in its shortest, diameter. The projecting surface of this mass is rough, and one or two sharp spicules can be felt, but a great part of its surface is covered by "vegetations."

Just beneath this nodule a cavity, nearly 2 cm. in length and 1 cm. in depth, opens below the level of the bottom of the sinus, behind the endocardium, and into the muscular substance of the heart—*i.e.*, a dissecting aneurysm has been formed.

The anterior and left posterior cusps of the valve have become confluent, and at the region of the junction—*i.e.*, opposite to the bony nodule, a wide opening, 1·5 cm. in diameter, exists, with a fringed border. The remaining parts of the valve are thickened, and an ulcerated spot is to be seen at one point of the ventricular surface.

REPORT ON THE STRUCTURE OF A MAMMARY TUMOUR, EXCISED FROM A GIRL, AGED TWELVE YEARS. (Mr. Barton's Case.)

[Read in the Pathological Section, December 5, 1885.]

Macroscopically, the consistence of the tumour is soft, pinkish white, homogeneous, and elastic; the cut surface bulges out, and the whole growth can be easily peeled out from the surrounding tissue—*i.e.*, it may be said to be encapsulated. The stained microscopic sections exhibit to the naked eye a fine mottling, and numerous small irregualr spaces which have been cut across. Under a low power these spaces are seen to be enlarged glandular alveoli, lined with epithelium, and separated by thick septa. The latter, which make up the greater part of the whole substance, appear, when more highly magnified, to be made up largely of spindle-shaped embryonic cells, as in a sarcoma, but in many parts this growth has become developed into a succulent fibrous tissue, full of elongated and other shaped cells, irregular protoplasmic bands, and with small spaces between all these elements. The smaller acini are often nearly filled with proliferating epithelium, but the larger ones have several layers of cells circumferentially disposed around the vacant lumen. The more external cells are large, with the protoplasm but little stained, and are regularly placed; the inner ones are smaller, more rounded, and they have strongly taken up the stain. The basement membrane of the glandular epithelium is not always distinct, and sometimes it is difficult to differentiate these cells from the neighbouring ones of the surrounding tissue. The growth may probably be considered to be an adenoma, with cellular hyperplasia of the interalveolar tissue; the only suspicious feature in the neoplasm being the large amount and embryonic character of the latter.

REPORT OF COMMITTEE OF REFERENCE.

By P. S. ABRAHAM, F.R.C.S., Secretary.

The following specimens have, at various times during the session, been referred to the Committee of Reference, and placed in the Secretary's hands :—

a. A calculus removed from the tonsil of a gentleman, by Mr. F. A. Nixon.

b. A mammary tumour, removed from a girl, aged twelve years, by Mr. J. K. Barton, December, 1884.

c. Sections of tumours appearing after exposure to irritation from carbolic acid, March, 1885.

(*a.*) The tonsillar calculus weighs 4·5 grammes, and is of an irregular shape, 23 mm. in its longest diameter, and 17 in its shortest. Parts of the surface are rugose, and irregularly mulberry-like, but at one end a remarkable saddle-shaped, smooth facet is situated, 13 mm. long, and 9 mm. broad, probably caused by the play over it of the palato-glossal muscle. At one side of the calculus is seen an irregular depression, 11 mm. in diameter, and about 4 mm. in depth, with very rough walls. A section of the calculus has been made, and exhibits but little evidence of lamellar aggregation; the texture is seen in some places to be freely porous, or occasionally more spongy, while at other parts a denser formation is apparent. The powder collected from the sawing becomes gray on heating, showing the presence of some organic material, but its bulk is only slightly diminished by prolonged heating. It effervesces slightly with acid, proving the presence of CO_2, and dissolves nearly completely. No uric acid could be demonstratd by the murexide test. Its main composition is, probably, phosphate of lime, with a little carbonate.

(*b.*) The Committee has adopted the description of the minute structure of Mr. J. K. Barton's mammary tumour, from a girl, aged

twelve years, which was given in the appendix to Mr. Barton's paper.

(*c.*) The sections of Messrs. Story and Ball's carbolic acid tumours show the structure of ordinary epithelioma—epithelial cells in collections, and nests, and in exuberance, occurring heterogeneously in the deeper tissues of the parts.