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PSOAS ABSCESSES FROM TUBERCULOUS SPONDYLITIS AS THE CAUSE OF COXITIS

BY

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Multiple localisations of tuberculosis in the bone- and articular system are not uncommon, and the presence of coxitis simultaneously with psoas abscesses from a tuberculous spondylitis has therefore not, as a rule, been noticed as anything particular, but has been looked upon as a chance coincidence. *Sorrel*, however, has called attention to the possibility of a direct conveyance of the tuberculous infection from such a gravitation abscess to the hip-joint. He has observed the development of coxitis in several cases where there already existed a psoas abscess from tuberculous spondylitis, and he therefore believes that gravitation abscesses may sometimes give rise to tuberculous infection of the hip-joint.

At the second international Congress of Surgical Orthopedy, held in London in 1933, *Vachelli* spoke on the subject of coxitis secondary to gravitation abscesses from lumbar spondylitis. Like *Sorrel*, he had on several occasions observed the development of coxitis in connexion with such abscesses, coming from spondylitis. He recalled the fact that, many years ago, *Broca* had described a case in which there was an open passage between a gravitation abscess and the cavity in the hip-joint. Such cases, in which it is possible anatomically to prove that tuberculous infection has entered the hip-joint by way of a psoas abscess from tuberculous spondylitis, seem to be very rare, however. At least I have been unable, in the literature to which I have had access, to find the description of any other, similar case. Yet

those cases in which it is possible, on necropsy, to demonstrate an invasion of the hip-joint by the tuberculous infection are of interest, not least because they help us to get a clearer idea of the ways by which the infection from a psoas abscess to that joint takes place. According to *Vachelli* several such ways may be imagined. The infection may invade the joint through the lymph channels, or there may be a growth of granulation tissue from the wall of the abscess over onto the joint-capsule; or the abscess may perforate into the joint, and thus empty its pus into the capsule of the latter; or, finally, the infection may take place *via* some iliopectineal bursa communicating with the joint. In the Apelviken Coastal Sanatorium we have had a case in which the necropsy disclosed the existence of a passage from an iliopsoas abscess, coming from a tuberculous lumbar spondylitis, to the hip-joint. I consider this case to be of an interest which justifies the following detailed description.

The patient was a man, born 19th October, 1902. In 1925—1926, he was tended in a sanatorium for an exudative pleuritis of his left side. About Christmas, 1927, he began to have trouble with his back, in the form of stiffness and a certain difficulty when attempting to pick up anything from the ground. A week later, a swelling appeared in his left groin. He was admitted into a hospital, and during his stay there a puncture was done of an abscess in that part. In July, 1928, a fistula opened in the same locality.

After that, he was for two or three periods in the Apelviken Coastal Sanatorium, suffering from tuberculous lumbar spondylitis with gravitation abscess and fistulæ, and tuberculous epididymitis of the left side. On 19th July, 1928, a roentgen examination was made of his vertebræ. In the side view, the lower half the fourth and the upper half of the fifth lumbar vertebræ were seen to be destroyed, and the remaining portions sunk into each other. There was no gibbus formation. The contiguous anterior corners of the destroyed vertebral bodies showed a blurred design, indicating a process still in progression. The ventrodorsal view showed nothing in the stay of lateral displacement.—An abscess in his left iliac fossa was punctured several times, and, as he became pyretic and suffered from pain, was finally incised and drained. An abscess in the right axillary line, immediately above the iliac crest, was likewise incised, whereby was disclosed a large abscess cavity, extending into the iliac bone. There developed a large pelvic abscess, and a perforation occurred between the intestine and the urinary bladder, with discharge of gas through the urethra on micturition, and great quantities of pus

and colibacilli in the urine. Even through the fistule in the left groin, gas and feces escaped, and in the beginning, urine as well. After a highly critical period, the patient's general condition got better. The tuberculous process in the lumbar vertebræ subsided little by little. The roentgenographs showed some further collapse of them both, but their content of lime increased, and the formerly blurred anterior contour of their bodies stood out sharper and smoother. When the patient was fitted with a corset and allowed to get up, he still complained of pain in his back, however; and on 15th December, 1930, an Albee's bridge-arthrodesis was therefore done, with insertion of a curved slice from the tibia in the cleft spinal processes of the second lumbar to the second sacral vertebræ.

Some time after the operation, the patient began to complain of pain in his left hip, wherefore a roentgen examination of the latter was made on 8th April, 1931. Nothing of a pathologic nature was observed, either as regards the interarticular space, the contours of the joint, the structure of the bones or the surrounding soft tissues. The mobility in both hip-joints was normal. On 16th December, same year, the mobility in the joints was still normal, except for a very slight restriction of the extension on the left side.

Little by little, the hip trouble disappeared almost completely; but in May, 1933, it returned in the form of pain in the left hip-joint whenever he moved the latter, and on 17th July, of the same year, he was once more admitted into the Apelviken Sanatorium.

Status, 17th July, 1933: General condition, good; patient rather thin. Temperature, 36.6°. Heart and lungs, no remark. No albumin in the urine. Slight, rigid gibbus of the sacrolumbar spine; no tenderness to tap against the same. In the left groin, a slightly secernent fistular opening. In the left iliac fossa is felt, on palpation, an indolent resistance, the size of a hen's egg. The patient walks with a slight limp of his left leg. The hip-joint is kept flexed about 15°. The bending in the hip is unrestricted; abduction and adduction somewhat restricted; lateral rotation almost completely debarred, medial rotation restricted. When the movements are ceased, the patient expresses pain; also when a tap is struck against the greater trochanter.

Roentgen examination, *26th July, 1933:* Marked atrophy of the bones around the left hip-joint. The interarticular space narrowed. Laterally in the collum, close to the attachment of the capsule, is a rarefaction, the size of a pea; and, at the same point, a slight inward curve in the contour. No positive changes in the sacroiliac joint. A roentgenograph of the spine, taken on 1st August, same year, shows no visible changes in the diseased vertebræ since the former examination. No signs of progressing destruction. Bridge fracture between the third and fourth lumbar vertebræ.

1st August, 1933: The pain in the left hip has grown worse. The

resistance in the left iliac fossa has become greater, and there is now some tenderness there. On micturition, there is frequently an escape of gas through the urethra. The urine is cloudy; albumin; considerable quantities of pus and colibacilli. Gas and feces have escaped through the fistula in the left groin.

1st September, 1933: For two weeks the patient has been feverish, with temperature around 38°. There is some tenderness above the resistance in the left iliac fossa. Puncture is done, and 50 c.c. of thick pus removed by aspiration. No bacteria in the direct preparation.

5th September, 1933: Incision above the resistance in the left iliac fossa, but no pus encountered.

13th September, 1933: For some days the patient has suffered from strong vomitings and a persistent, troublesome hiccough. His general condition has become markedly worse; yesterday afternoon, he suddenly got a violent pain in his left hip. The symptoms from the hip-joint have rapidly become acute. Even the slightest movements in the joint, which hitherto caused relatively little pain, are now intensely painful. Residual nitrogen in the blood, 50 milligram per cent. Blood pressure, 130.

The patient's condition continued to get worse, and on 21st September, 1933, he died.

Necropsy.—In the place where the left psoas muscle should be, was found an abscess cavity, almost as large as a child's head, extending from the fourth lumbar vertebra to some distance down in the left iliac fossa, and containing only a relatively small quantity of pus. From its upper part opens up an offshooting branch, as wide as an index finger, which continues back of the large vessels, to a couple of centimeters below the hip-joint. At the point where it passes in front of the joint is an almost circular opening, fully 1.5 cm. in diameter, with firm, smooth edges. Through the iliofemoral ligament, this opening connects the psoas abscess with the cavity of the hip-joint. The articular capsule is slightly swollen. The cartilaginous covering of the caput is for the most part intact, but at one point a hollow is worn in it, as large as a pea, and at the bottom of this hollow the spongiosa is laid bare. Immediately around this spot the cartilage is bluishly discolored. In the acetabulum, the cartilage is to a great extent worn away. Otherwise, no osseous foci are encountered. Microscopical examination of a small piece of the capsule, excised from a place to the perforation, showed it to be full of fresh tuberculous granulations; while a similar examination of pieces from the worn portions of the caput and acetabulum gave the picture of a purulent osteomyelitis.

The fistula in the groin led directly into the sigmoid flexure, and the same was the case with another fistula, from the urinary bladder. Neither of them apparently connected with the psoas abscess. There were no other changes, either in the peritoneum or the rest of the abdominal cavity.

Except for a small cheese-like focus in the apex of the left lung, large, fatty, white kidneys and a large, firm spleen, there were no macroscopically demonstrable changes of the inner parenchymatous organs.

We thus have here a case of an old tuberculous spondylitis, in which the actual tuberculous process in the spine has subsided, but there still remains a psoas abscess in the left side. From the left hip-joint, sneaking symptoms of coxitis begin to appear, and develop slowly, so that even after two and a half years the roentgen picture of the hip showed only slight changes, in the form of atrophy, some narrowing of the interarticular space, and a very small defect in the collum, close to the lateral attachment of the capsule. There seems to have occurred a slight secondary infection of the abscess, and a week before the patient's death the symptoms from the hip suddenly became intensely acute. The necropsy revealed the existence of a connecting passage between the gravitation abscess and the cavity of the hip-joint, together with detrition of the articular cartilage, especially that of the acetabulum, but also of a certain minor area of the caput. An excised specimen from the capsule was found to be full of tuberculous granulation tissue.

The smooth, firm edge and almost circular shape of the opening in the iliofemoral ligament, which formed the passage between the psoas abscess and the hip-joint, make it probable that this opening was not a result of destruction of the ligament through ingrowth of tuberculous granulation tissue from the former. As a matter of fact, there is often a communication between the hip-joint and the iliopectineal bursa which separates the iliopsoas muscle from the iliofemoral ligament. It has very likely been thus in the present case. The communication between the joint and the bursa anteriorly from it has existed primarily, through the opening in the iliofemoral ligament; the psoas abscess has perforated into the bursa, and through the opening between the latter and the joint the tuberculous infection has found its way into the hip.

It is of course through the iliopsoas abscess, more than through any of the other gravitation abscesses, that the tuberculous infection is likely to be transferred to the hip-joint. The

others lie farther away from the latter, the iliofemoral abscesses following the large vessels closer to the surface, the isciofemoral ones passing through the lesser sciatic foramen. But not even for the iliopsoas abscesses are the anatomical conditions particularly favorable as regards a direct penetration to the joint. The iliofemoral ligament, which lies in front of the latter, forms a strong obstacle, while, at the same time, the spaces between the muscles down along the thigh offer an easy road for the wandering pus. It lies nearest to imagine the infection of the joint taking place, as in the case here described, through the spread of the abscess to an iliopectineal bursa already communicating with the cavity of the hip.

Of the 390 cases of tuberculous coxitis treated in the Apelviken Coastal Sanatorium during the years 1929 to 1933, there were seven in which a psoas abscess from a tuberculous spondylitis already existed in the same side in which the coxitis eventually developed. The total number of cases of lumbar spondylitis treated during the same period was 561. In two of the cases in which the coxitis developed secondarily to a psoas abscess in the same side, there were other tuberculous foci in the bone system as well. During the same period there was but one case of coxitis in which the patient had only a psoas abscess in the opposite side, and in which the simultaneous occurrence of the two must, consequently, have been incidental. In the great majority of cases, the abscess was thus in the same side as the coxitis. This would seem to point to a frequent, close connexion between psoas abscesses and coxitis in the same side, even though there may be cases in which the simultaneous presence of the two is merely the result of an incidental localisation of the tuberculous process to the spine and the hip-joint.

In six of the seven cases in which the coxitis developed in the same side as the psoas abscess, that development occurred while the tuberculous process in the spine was still in progress; while only in one of them—the case related above—the spondylitic process had apparently subsided by the time the coxitis made its appearance.

In one of the cases, that of a girl three years old, the first roentgen examination at the sanatorium here, two months after the symptoms of coxitis had first set in, showed a luxation of the caput, but not, as yet, any roentgenologically demonstrable osseous destruction, with the exception of a slight detrition in the roof of the acetabulum. The head of the femur was reset, and not until later did the case develop so that, eventually, there were extensive destructions both of the caput and of the acetabulum. This has thus been a case of sudden luxation of the hip-joint at an early stadium of tuberculous coxitis, before there had as yet been any destruction of bone sufficiently great to cause the dislocation. Sudden luxation like this is a rather unusual complication. The cause of its occurrence has been the subject of much discussion. In the present case, however, the patient had a psoas abscess in the same side, and it lies near to suppose that a direct perforation of the latter into the hip-joint may have been responsible for the dislocation. The detrition of ligaments and portions of the capsules resulting from a direct encroachment of the abscess on the joint create a condition favorable to a luxation of the caput, and it is possible that, in some of these cases of sudden dislocation in connexion with coxitis, the cause is to be found in a perforation of a psoas abscess into the cavity of the hip.

A coxitis due to the penetration of a psoas abscess is, at first, easily overlooked. A certain restriction of the mobility in the joint may be caused by the abscess itself, and need not necessarily be a sign of coxitis. Especially if the spondylitis has subsided, and the tuberculous infection which through the psoas abscess has invaded the joint is only slightly virulent, the destruction to the latter may be relatively insignificant, and its progress slow. Under those circumstances it may be a long while before the roentgenologic picture shows any changes on which a positive diagnosis of coxitis can be based. The first changes of that kind to be looked for are, as in the case related above, pronounced atrophy and narrowing of the interarticular space.

SUMMARY

After some remarks on the scarcity of cases on to be found in the literature, in which tuberculous infection of the hip-joint from a psoas abscess has been proved anatomically, the author goes on to describe such a case, in which the necropsy disclosed the existence of an open passage between a psoas abscess and the cavity of the hip; the abscess having, in all probability, perforated into an iliopectineal bursa communicating with the hip-joint.

Among a material of 561 cases of lumbar spondylitis, and 390 cases of coxitis, there were 7 in which coxitis had developed after a psoas abscess in the same side of the body. In one of them, the spondylitis had subsided by the time the coxitis declared itself, in the others it was still in progress.

One of the cases gives the author occasion to point out that the cause of a number of cases of sudden luxation of the caput at an early stage of the coxitis may be found in a direct invasionment of the hip-joint by the psoas abscess, and may be due to the destruction, thus induced, of portions of the ligaments and capsules of the latter.

RÉSUMÉ

L'autéur relève le petit nombre de cas publiés où l'on a constaté par voie anatomique une infection tuberculeuse de l'articulation de la hanche, causée par un abcès du psoas. Il décrit un cas où l'autopsie fit constater un passage ouvert entre un abcès du psoas et l'articulation de la hanche. A toute probabilité l'abcès du psoas aurait perforé dans une bursa ilio-pectinea communiquant avec l'articulation de la hanche.

Sur un nombre de 561 mal de Pott lombaires et de 390 coxalgies, 7 coxalgies s'étaient produites à la suite d'un abcès situé dans le psoas du même côté du corps. Dans un cas le mal de Pott était guérie au moment de la naissance de la coxalgie; dans les autres cas, le mal de Pott était a la période de pleine évolution. A l'occasion d'un de ces cas, l'auteur indique la cause d'une luxation soudaine du caput pendant le stade de début de la coxalgie, pourrait être la perforation directe d'un abcès du

psoas dans l'articulation de la hanche, luxation favorisée par la destruction partielle des ligaments et de la capsule.

ZUSAMMENFASSUNG

Es wird auf die Seltenheit von publizierten Fällen hingewiesen, in denen sich eine tuberkulöse Infektion des Hüftgelenks durch einen Psoasabszess anatomisch aufzeigen lässt. Ein Fall wird beschrieben, wo bei der Sektion eine offene Verbindung zwischen einem Psoasabszess und dem Hüftgelenk nachgewiesen werden konnte. Der Psoasabszess hatte sich mit aller Wahrscheinlichkeit in eine mit dem Hüftgelenk kommunizierende burza iliopectinea hineingebohrt.

Bei einem Material von 561 Fällen von Lumbalspondylitis und 390 Fällen von Coxitis waren in 7 Coxitis-Fällen gleichseitige Psoasabszesse entstanden. In einem der Fälle war mit dem Auftreten der Coxitis die Spondylitis zum Stillstand gekommen, in den übrigen dauerte die Spondylitis weiter an.

In Anlehnung an einen der Fälle wird ausgeführt, dass die Ursache zu einem Teil der Fälle von plötzlicher Luxation des Caput in einem früher Stadium der Coxitis in einem direkten Übergreifen eines Psoasabscesses auf das Hüftgelenk mit den dadurch entstandenen Destruktionen der Ligament- und Kapselpartien gesucht werden kann.

LITERATURE

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