FROM THE APELVIKEN COASTAL SANATORIUM, VARBERG, SWEDEN (CHIEF: ROBERT HANSON, M. D.)

TUBERCULOSIS PUBIS

BY

ARVID HELLSTADIUS

Tuberculosis of the pubis is generally regarded as something very unusual, and the rarity of tuberculous osteitis localised to the pubic bone is frequently remarked on in the literature. *Broca*, writing in 1914, had not, among 3750 cases of tuberculosis in bones and joints, found a single one with that localisation. *Valtancoli*'s statistics from the Instituto Rizzoli in Bologna, show for the years 1896—1919, among 2790 cases of surgical tuberculosis, only 5 (0.18 per cent) with localisation to the pubis; and *Peeremans,* of the Children's Hospital in Boston, found among 1685 cases of surgical tuberculosis in children below the age of twelve years only 2 (0.11 per cent) with that localisation. *Sorrel,* on the other hand, thinks that the disease is not so rare in the pubis as generally believed, but gives no figures to indicate his estimate of its frequency as compared with that of tuberculosis in other bones. That it is still considered as a rarity is proved, however, by the fact that such isolated cases of it as are observed are sometimes made the subject of communications in the literature.

In the Apelviken Coastal Sanatorium we have, in the course of time, had for treatment not a few cases of tuberculosis of the pubis—in the years 1928—1933 not less than thirteen,—and we, too, have come to the conclusion that the disease in that locality is not so rare as it is generally asserted. I have therefore made a compilation of our cases, and have tried to ascertain the degree of their relative frequency, especially as compared with that of tuberculosis of bones and joints as a whole. As my ma-

terial is thus rather large, I have, at the same time, made it the basis for a brief exposition of the experience which we have derived from it with regard to the clinical, thereapeutical and prognostic aspects of the disease.

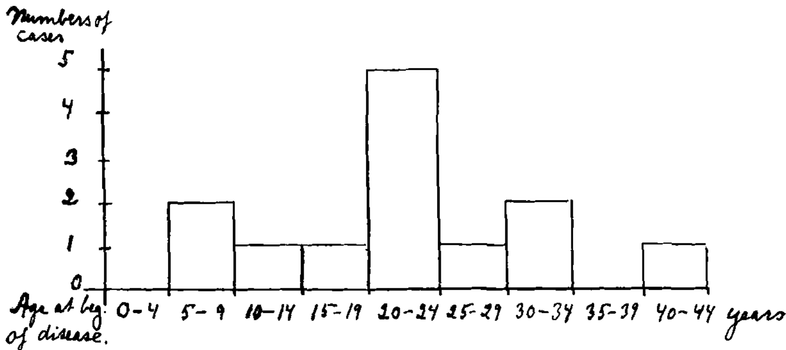
I have not included in my investigations those cases in which the tuberculous osteitis was localised to the body of the pubis, —the portion of the bone nearest the hip-joint. Several authors have done so, but *Sorrel* and *Chaveau* call attention to the difficulties which then arise, because from the clinical point of view there is an absolute distinction between the disease in the pubic body and tuberculous osteitis in the rest of the pubis. In the case of tuberculous processes in the pubic body, the immediate nearness to the hip-joint has a dominating influence both on the symptomatology and the prognosis, and thus becomes in a great measure determining for the therapy adopted. The process frequently spreads to the hip-joint, and gives rise to tuberculous coxitis. Clinically, such cases are therefore rather to be grouped with those in which the tuberculous process has its starting point in some part of the acetabulum, as a form of juxta-articular tuberculosis; while the tuberculosis in the pubis otherwise is para-articular. I have therefore in this paper dealt only with the last named localisation of the disease, with exclusion of processes in the body of the pubis.

Incidence of Tuberculosis of the Pubis.

The total number of surgical tuberculosis cases dealt with in the Apelviken Coastal Sanatorium during the years 1929—1933 was 2545. Of these, 11 (0.43 per cent) were tuberculosis of the pubis. The total number in which the tuberculous osteitis was localised to the pelvis (not including tuberculous foci in the acetabulum) was 107, of which 75 were iliosacral tuberculosis, 11 tuberculosis of the pubis. The number of cases with localisation to the pubis, in proportion to the total number of surgical tuberculosis cases, was thus larger than in either *Broca's*, *Valtancoli's* or *Peeremans'* statistics, which are often cited in proof of the relative rarity of tuberculosis in that locality. As regards *Valtancoli's* figures ith must however be remembered that a part

of the period over which his statistics extend lies before the time when roentgenology became an effective aid to the diagnosis; and *Peeremans'* figures include only children up to the age of twelve years.

Age Incidence.



The largest number of cases occurred in subjects between 20 and 24 years of age. The youngest patient was 5 years old when the disease began, the oldest 43. Of the 13 cases, 8 were male, 5 female. In two of the latter, the development of the disease coincided with a pregnancy; in one of these the first symptoms appeared four days before partus, in the other in immediate connexion with the delivery. It is possible that that pregnancy may induce a state particularly favorable to the development of tuberculosis in the pubis. During gravidity the diastasis between the pubic bones of the two sides is increased, and in the roentgenographs a widening of the cleft of the symphysis becomes apparent. According to *Heyman* and *Lundqvist,* this widening probably begins in an early stage of the pregnancy, and reaches its maximum during the last months of the latter, after which there is no further change—and no further widening even during the actual process of labor—until, after delivery, the symphysis again gradually assumes its normal width. During the latter part of pregnancy the symphysis is thus subjected to a traumatic influence, which may perhaps be imagined to favor the development of tuberculosis in the pubis.

Seat of the tuberculous Destruction.

As it will be seen from the roentgenographs, the breaking down of the bone was in every case, except one, localised to the area nearest the symphysis, sometimes with an extension upwards into the superior, or downwards into the inferior ramus. In these cases, the surface of the bone toward the symphysis was destroyed, in many instances largely so, and the roentgenographs showed a considerable widening of the cleft. In 9 of the cases, the tuberculosis was bilateral, in 4 only the bone of one side was involved. The tuberculous process probably spreads from one side of the pubic bone to the other *via* the symphysis, through ingrowth of tuberculous granulation tissue into the latter, as a result of which the fibrocartilage is destroyed. Only in one of my cases—that of a girl in whom the disease in the pubis developed when she was five years old—could no connexion between the tuberculous destructions in the bone and the symphysis be roentgenologically demonstrated. In that case, the tuberculous focus was situated in the medial part of the inferior ramus, immediately below the symphysis. *Menard* claims that in children the destructive tuberculous process never invades the symphysis from the pubic bone, while according to *Peeremans* it occasionally does so, though not nearly as often as in adult subjects. Especially in early childhood, the cartilaginous covering the surface of the pubic bone towards the symphysis is considerably thicker than in later life, and should therefore to a certain extent be an obstacle to such invasion. My material contains only two cases of very young patients. One of these was the girl of five years just mentioned; she was the only one of all my thirteen cases in whom the tuberculous destruction had not spread to the symphysis, but was confined to an isolated focus in the inferior ramus. In the other, a girl eight years old, the process had destroyed the symphysis, and had even invaded the opposite side of the pubic bone.

Symptoms.

In many instances the first symptom was pain, in some cases localised to a point medially above the pubic region, but not

infrequently, when the tuberculosis was unilateral, or chiefly unilateral, more to one side and extending out into the groin. In other cases the pain was only in the groin, sometimes radiating from there downwards along the anterior and medial sides of one thigh. In some instances where both sides were involved, the pain was felt over a larger area, radiating from the pubic region through both sides of the groin and down along the anterior side of both thighs. In most cases the pain was only fairly intense, or even relatively slight. In a couple of cases, however, there were rather strong pains in the region of the hip-joint and thigh, and the patient's walk would be limping. In not a few cases the subjective discomfort was confined to a paresthesia extending along the groin on one side, through the labium majus and down the anterior and medial surfaces of the thigh. In other cases there would be a total absence both of pain and paresthesia, and the first symptom of the tuberculosis in the pubis would then usually be the appearance of a cold abscess. In one case there were neither subjective symptoms nor any abscess formation, and the existence of the tuberculous focus in the pubis was discovered only by chance, through a roentgenograph being taken for the purpose of verifying some symptoms of iliosacral tuberculosis. It was then discovered that, besides the latter, there were also extensive tuberculous destructions in the pubic bones of both sides. In two cases the same subjective troubles of which the patients were complaining had been felt by them once before, but had gradually ceased, and had then come again, in one case a year, in the other a few months after. In these cases it was evidently a matter of recurrence of an already existing tuberculosis of the pubis, which had subsided for a time and then, for some reason or other, had become active once more.

Among the various descriptions of pubic tuberculosis I have found some in which the pain was localised to the gluteal region, or had the character of ischiatic pains, radiating out towards the posterior side of the thigh. Also among my material there is a case in which there were pains of this character, but in that case there was a tuberculous process going on in the iliosacral

joint simultaneously with the one in the pubis, which makes it most reasonable to ascribe the pain, in that instance, to the former. It is quite conceivable, however, that tuberculosis of the pubis may, in itself, give rise to pains in the gluteal region. In roentgenographs of these cases one sometimes notices that one side of the pubic bone occupies a somewhat higher level than the other. This indicates that there is a subluxation in the sacroiliac joint, round a transverse axis, of that half of the pelvis. This subluxation has come about through destruction of the symphysis, as a result of which the support has been lost which formerly held the two halves of the pelvis together. *Chamberlain* describes a case of tuberculosis of the pubis, with pain only over the sacroiliac joint, in which such a displacement of the pubic bones of the two sides in relation to each other showed that a subluxation of this character existed in the sacroiliac joint. But *Chamberlain* also warns against the risk of mistaking the *asymmetry* which sometimes exists between the pubic bones of the two sides for subluxation of one half of the pelvis. Among my material there was a case in which the pubic bone of one side occupied a distinctly higher level than the other, and in which there was consequently subluxation of the sacroiliac joint; yet the patient had not said anything about pain in that region, but had complained only of pain in one side of the groin.

The pubic region is rather easily accessible for inspection and palpation; yet those methods of examination have often proved of little or no help as means to establishing the diagnosis. Not infrequently there has been a total absence of tenderness both directly, on palpation of the pubic area, and indirectly, on compression of the pelvis from both sides. Even in cases where the roentgenographs showed the existence of large, extensive destructions, palpation has often failed to give any positive indication of variations from the normal. As regards the direct tenderness, it seems to have been found more often by palpation over the posterior aspect of the symphysis than over the anterior.

In the great majority of cases tuberculosis of the pubis is attended with the formation of fistulæ or abscesses. In not less than 11 of my thirteen cases were there either abscesses or spon-

taneously (as opposed to post-operatively) occurring fistulæ, and only in 2 were there no such complications. In 3 cases they opened externally on the abdominal wall, above the symphysis; in 3 on the groin, in 2 on the anterior side of the thigh, towards the adductors; in 2 in the fold between the thigh and respectively the scrotum and the labium majus; in 2 near the anus, in 1 in the gluteal fold. Among my own material there are no cases of perforation to the bladder or the urethra, but there are cases described in which perforation to the bladder occurred, sometimes even with expulsion of sequestra into the latter. It is interesting to notice that among my material there is not a single instance of abscesses or spontaneous fistulæ opening on the anterior side of the symphysis itself, but that such fistulæ as occurred there were without exception post-operative. The fibrocartilaginous disc which unites the pubic bones of the two sides is covered on its anterior aspect with a fibrous tissue continuous with the tendons of the recti muscles (*Spalteholtz*). This fibrous tissue must to a certain extent prevent abscesses from breaking through at this point, and may be the reason why none have opened on the anterior side of the symphysis. Such abscesses and spontaneous fistulæ as occurred in the region nearest the symphysis were either situated farther out toward the groin, or had taken an upward course and opened on the abdominal wall above the symphysis.

The abscesses which opened on the interior surface of the thigh had followed the adductor muscles down into the latter, while those that opened in the fold between the thigh and the scrotum or labium majus had broken through medially from the attachment of the adductor muscles to the inner margin of the inferior ramus or the lower part of the symphysis, and had descended thence to the genitocrural fold. The abscesses in the gluteal fold had probably in most cases burrowed their way outwards along the posterior side of the adductor muscles. Those near the anus had developed in the pelvis minor, from the posterior side of the pubic bone or the symphysis, and had penetrated along the pelvic floor, outwards to the rectum. In a similar manner abscesses can form in the wall of the vagina

and in the labium majus, of which several cases are described in the literature.

In many cases of tuberculosis of the pubis there are thus neither pain, abscesses, tenderness nor any other palpation findings directly pointing to the existence of a focus in the pubic bone. If there is pain in the region of the hip-joint, and especially if the mobility there is slightly restricted and there is some atrophy of the thigh (as sometimes can be the case), it lies very near to suspect a coxitis. Abscesses in the adductor- or gluteal region may suggest the possibility of spondylitis; an abscess in the posterior part of the labium majus may have been due to bartolinitis, an abscess extending downwards near the anus may be taken for an ordinary anal abscess, an abscess in the abdominal wall above the symphysis mistaken for a desmoid, an urachus cyst, a cyst from the ligamentum rotundum or a lipoma of the abdominal wall, etc. In many cases it is only the roentgen film of the pubic region that discloses the starting-point of such abscesses, fistulæ or subjective symptoms.

But even the roentgenologic picture may leave room for misinterpretation, so that the tuberculous process is mistaken for one with an entirely different etiology. Confusion with fibrous osteitis, osteosarcoma or lues is perhaps rather unlikely, as localisation of those diseases to the pubic bone is relatively rare; but the diagnosis from a septic osteitis with more or less chronic course can often be a matter of considerable difficulty. If the anamnesis contains such features as sudden onset of the illness, high fever and rather intense pain, it will lie very near to suspect a septic osteitis; but also a tuberculous osteitis may have such an acute beginning, though not nearly as often. Sometimes it may require a pathoanatomical or bacteriologic examination to get the diagnosis definitely established; but in cases where Mantoux's test, with intracutaneous injection of 3 milligrams of tuberculin, proves negative, and the patient's general condition otherwise is not particularly impaired, such examination should not be necessary. Of course, the simultaneous presence of tuberculosis in other organs will make it more or less likely that also the process in the pubic bone is of tuberculous nature; in the

same way as the diagnosis of septic osteitis will be supported if it is found that the onset of the illness can be traced to some septic cause, such as a persistent tendovaginitis or some other septic osteitis or osteomyelitis.

Therapy.

In these, as in all other cases of surgical tuberculosis, the best time for operative intervention with eradication of the tuberculous focus is when the inflammation, after sufficiently long general treatment, has subsided, and the osteitic process has become circumscribed. If the operation is done too soon, while the process is still going on, and before the pathologic area has become definitely narrowed down, there is very great risk of not getting all of the diseased bone extirpated, but that some portion may be left, which will later be the cause of recurrence and fistulation. Surgical intervention on wrong indications may lead to the formation of fistulæ in the cicatrix left by the operation, which it may take years to get healed. Some of the cases in my material which had been operated on elsewhere and came to us in that condition have been extremely difficult to cure, and it has taken a very long time to get those fistulæ to heal.

Surgical intervention is indicated if there are sequestra present, and when there are fistulæ which have been suppurating for a long time without there being any signs of the purulence tending to abate. The operation should then by preference be done when the tuberculous destruction has ceased, and the osteitic process has become circumscribed. In all other cases, where there are neither sequestra nor any fistulæ of long standing, the wisest course will probably be to refrain altogether from surgical intervention. In such cases a complete cure can often be obtained by keeping the patient sufficiently long in bed and puncturing any abscesses that might possibly develop. Risks of serious complications there are probably none,—in contrast to what is the case from tuberculous osteitis in the pubic body. On the other hand, tuberculosis of the pubic bone is in most cases attended with abscess formation; much more frequently

so than, for instance, sacroiliac tuberculosis. If the abscesses, in spite of puncture, show no tendency to heal, and the tuberculous process in the pubic bone has otherwise subsided, eradication of the focus may be advisable, even if there are neither sequestra nor fistulæ present.

The operative technic usually employed at the Apelviken Sanatorium in cases of pubic tuberculosis has been that of laying an incision transversally over the pubic region, whence any foci within the area of the symphysis and the superior ramus are easily reached. If the focus extends farther down into the inferior ramus, the incision is best laid outwards along a line from the pubic tubercle to the ischial tuberosity, whereupon one dissects downwards to the medial border of the inferior ramus. The funiculus which crosses the upper portion of the operative field is isolated and held aside, upwards and towards the middle, by means of a hook. If necessary, part of the adductor musculature may also be loosened with a thin layer of periosteum and cortex, and be turned aside outwards, whereby access is afforded also to the lateral portion of the inferior ramus.

Prognosis.

Serious complications from tuberculosis of the pubic bone or the symphysis are hardly to be feared,—always except from the localisation to the pubic body, whence the process may spread to the hip-joint. From the superior ramus such spreading has not occurred in any of the cases among my material. Nor was there among my cases any instance of perforation to the bladder; but examples of that complication exist, and have been described in the literature. In one of my cases, in which a fistula had persisted active for two years, amyloidosis developed, and after bronchopneumonia had supervened, the case ended in the patient's death. With that single exception, none of the thirteen patients died during their stay in the sanatorium. Sometimes there may besides the tuberculosis of the pubis be osteitis of some other part of the skeleton. This was the case in two instances among my material. In one case the patient, besides the pubic tuberculosis, had bilateral sacroiliac tuberculosis and

tuberculosis of one knee-joint, in the other case tuberculosis of the shoulder-joint.

If there is no concurrent tuberculous development at some other point, where such a process may prove more or less serious, the prognosis for tuberculosis of the pubis is good, both *quoad vitam* and *quoad functionem*. It is true that in one of my cases, where fistulation had persisted, amyloidosis set in; but that complication is no doubt exceptional. Such fistulæ as may exist one will usually sooner or later succeed in getting to heal. A rather remarkable feature is the seeming absence of any functional troubles when once the tuberculosis of the pubis has been completely cured. Very often the symphysis has been utterly destroyed, and one would think that in such cases the result would be a certain lack of stability of the pelvic girdle, and that, in consequence, one would witness the same trouble as, for instance, after a rupture of the symphysis. This does not seem to be the case, however. Dr. *Robert Hanson,* chief surgeon of the sanatorium here, tells me that he has never seen a single instance of functional troubles from tuberculosis of the pubis, when once the latter had been completely cured. The same is the observation of *Sorrel* and *Chaveau,* who say that: *malgré la legère disjonction pubienne signalée dans toutes nos observations, la marche après guérison fut toujours excellente.* It will therefore also at least as a rule be unnecessary to stabilise the pelvic girdle, as some have proposed, by securing the two pubic bones to each other by means of a piece of transplanted bone inserted above the symphysis.

SUMMARY

The author has made a compilation of 13 cases of tuberculosis of the pubis from the Apelviken Coastal Sanitarium (Sweden). The tuberculosis of the pubis constituted 0.43 per cent. of all the surgical tuberculosis cases, which shows that tuberculosis of the pubis is more common than generally supposed, and its frequency, in proportion to that of surgical

tuberculosis with other localisations, greater than it would appear from other, frequently quoted, statistics. On the basis of this relatively large material, the author gives his experiences with regard to the clinic, therapy and prognosis of the disease in the pubis.

RÉSUMÉ

Parmi un matériel de malades fournis par le sanatorium marin d'Apelviken (Suède), l'auteur a groupé ensemble 13 cas de tuberculose de l'os pubis. La tuberculose de l'os pubis représentait 0,43 % sur tous les cas de tuberculose articulaire et osseuse. Ce chiffre met en évidence que la tuberculose de l'os pubis est plus fréquente qu'on ne le pense généralement, le pourcentage susnommé dépassant celui donné dans d'autres statisques dont on s'est souvent autorisé. L'auteur rend compte des expériences que lui a values ce matérial relativement riche de tuberculeux de l'os pubis, au sujet de clinique, de thérapeutique et de prognose.

ZUSAMMENFASSUNG

Der Verfasser hat aus einem Material aus dem Kustsanatorium Apelviken (Schweden) 13 Fälle von Pubistuberkulose (Tuberkulose im os pubis) zusammengestellt. Die Pubistuberkulose machte 0,43 % sämtlicher Fälle von Gelenk- und Knochentuberkulose aus; diese Ziffer beweist, dass die Pubistuberkulose gewöhnlicher ist, als man sich im allgemeinen vorstellt, und dass ihre Häufigkeit grösser ist, als es aus anderen oft zitierten Statistiken hervorgeht. Es werden die Erfahrungen dargelegt, welche dieses relativ grosse Material von Pubistuberkulose hinsichtlich Klinik, Therapie und Prognose ergeben hat.

LITERATURE

Bean: Tuberculosis of the symphysis pubis. The Journ. of Bone and Joint Surg. vol. 12, 1930.

Blaire: Tuberculosis of symphysis pubis. The Journ. of Bone and Joint Surg. vol. 11, 1929.

Chamberlain: The symphysia pubis in the roentgen examination of the sacroiliac joint. The Amer. Journ. of Roentgenol. vol. 24, 1930.

Heyman and *Lundqvist:* The symphysis pubis in pregnancy and parturition. Acta obst. et gynecol. scand. vol. 12, 1932.

Joachimovits: Über die Differentialdiagnose der Schambeintuberculose beim Weibe und über die Wege der Abscesswanderung bei dieser Erkrankung. Dtsch. Zeitschr. f. Chir. vol. 219, 1929.

Kremer and *Wiese:* Die Tuberkulose der Knochen und Gelenke. Berlin 1930. J. Springer.

Walter Müller: Röntgenologische Untersuchungen über die Symphyse Schwangerer. Zbl. f. Gynäk. vol. 55, 1931.

Peeremans: Quelques considérations sur la tuberculose du pubis. Arch. franco-belges de chir. vol. 27, 1924.

Petridis: Un cas de tuberculose du pubis. Bull. et mém. Soc. nat. de chir. vol. 52, 1926.

Rendu and *Wertheimer:* Sur un cas du tuberculose du pubis et de la symphyse pubienne. Rev. d'Orthop. vol. 9, 1922.

Silverskiöld: Zwei Fälle von Tuberculosis Symphysis Pubis. Acta orthop. scand. vol. 4, 1933.

Sorrel: Tuberculose Osseuse et Osteo-articulaire. Paris 1932. Masson et Cie.

Sorrel and *Chauveau:* Six cas de tuberculose du pubis (surface angulaire). Bull. et mém. de la Soc. Anatomique de Paris. vol. 91, 1921.