

NON-PULMONARY TUBERCULOSIS AND PREGNANCY

BY

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DURING the last half-century a vast literature has accumulated concerning the problem of pulmonary tuberculosis and pregnancy with particular emphasis on the incidence, prognosis and management. Little has been written about non-pulmonary tuberculosis and indeed most of the standard text-books do not even mention its occurrence. It has not been possible to find a comprehensive review of the subject though many articles have been written about individual tuberculous lesions. The writer was stimulated to a perusal of this literature by the occurrence of five cases within a short time at the Royal Maternity Hospital, Belfast. It is proposed to describe these cases and to refer briefly to the literature in so far as it concerns them.

CASE I. Mrs. A. This was a primigravida in her 27th year, who had been married for 8 months. She attended the antenatal clinic on 28th September, 1949. Her last menstrual period commenced on 13th March, and she was, by her dates, in her 29th week. She had no complaints but mentioned, in passing, that a small ulcer had appeared on her vulva shortly after her marriage and that it was still present. In 1935 she had been in a sanatorium for 4 months with pulmonary tuberculosis. I am indebted to the Medical Superintendent, Dr. A. Lynn, for a summary of her condition at that time. "This patient had chronic bilateral tuberculosis, with a positive sputum. She also had a cervical adenitis. She was treated by bed rest alone, and was much improved on discharge. She failed to attend for further observation." On examination the patient was healthy in appearance and her pregnancy corresponded with her dates. A small ulcer

was detected on the outer aspect of the right labium majus, measuring approximately 1 centimetre in diameter (Figs. 1 and 2). It was superficial, irregular in outline, clean and slightly tender. The border was undermined and the base was slightly indurated. There was no evidence of inguinal adenitis.

The patient was admitted to hospital for investigation—only the salient features are recorded. On X-ray the chest showed healed tuberculous lesions at the apices. The Wassermann reaction was negative and swabs from the ulcer were unhelpful. The ulcer was excised—acid- and alcohol-fast bacteria were identified on direct examination of its base and the histological picture was that of tuberculosis (Fig. 3). Material from the ulcer was inoculated into each of 2 guinea pigs but unfortunately both died. A catheter specimen of urine was normal and a 24-hour specimen was negative on culture for tuberculosis, as was stool culture. On cystoscopy the bladder mucosa was healthy and the left ureteric orifice was functioning normally. The right ureteric orifice could not be identified and there appeared to be no secretion from the right renal tract. An intravenous pyelogram (Fig. 4) showed a normal left renal tract and failed to reveal any secretion in the right kidney. The radiologist also reported a healed tuberculous lesion of the 2nd and 3rd lumbar vertebrae with destruction of the intervertebral disc and paravertebral calcification suggested a healed psoas abscess. On interrogation no history of a spinal lesion could be obtained, and no clinical evidence of it could be found.

The patient remained in hospital throughout the remainder of her pregnancy. The wound of the vulva healed by primary union. Repeated culture of the urine was negative for tuberculosis and no symptoms referable to the urinary tract were noted. The patient was delivered by forceps on 23rd December, 1949, and she had a normal puerperium.

On the 10th day she was transferred to the Royal Victoria Hospital, Belfast. Investigation confirmed the previous findings and the urine was now found to be positive, direct and on culture, for tuberculosis. On 13th January, 1950, a right-sided nephrectomy and ureterectomy were performed by Mr. Ian Fraser. The kidney (Fig. 5) was the seat of a tuberculous pyonephrosis and the ureter was also involved. Recovery was uneventful and 6 months after operation the patient remained well. Unfortunately she had been depending on the "safe period" and at the examination she was approximately 6 weeks pregnant. In view of her recent history, another pregnancy appeared hazardous and the pregnancy was terminated uneventfully by dilatation and curettage. The patient was advised to avoid pregnancy for at least 2 years and she was given advice about preventive measures.

Comment. Tuberculosis of the vulva was first described by Winckel of Leipzig in 1881. Berkeley (1903) found 4 authentic cases described in the literature up to that time. Norris (1937), writing in Curtis's textbook, could only find 75 cases and considered that tuberculosis of the vulva was 25 times less common than carcinoma. In 1928 the same writer quoted the incidence as 1 per cent to 2 per cent of all genital tuberculosis and considered that lesions of the external genitalia were usually terminal events. It is understandable, therefore, that tuberculosis of the vulva is extremely rare in association with pregnancy and the writer could find only 2 cases described in the literature. Gonnet, Bansillon, and Joly (1936) describe a fatal case occurring in a young primigravida. She developed a small tuberculous ulcer of the labium majus early in pregnancy. This had almost healed before delivery but within 3 weeks the patient died as the result of tuberculous septicaemia. At autopsy no other focus of infection could be found and the ulcer was considered to be the primary lesion. Petit and Bender (1903) describe a multipara with hypertrophic tuberculosis of the

vulva. Two months after a normal confinement the vulva was excised with complete recovery.

Matthew (1949) stresses the diagnostic difficulty in cases of tuberculosis of the vulva. Giant-cell systems may result from any chronic infection and the acid-fast *Mycobacterium smegmatis* may easily be mistaken for *Mycobacterium tuberculosis*. Unfortunately positive animal inoculation was not obtained in this case for reasons already stated. Nevertheless, the presence of alcohol and acid-fast bacteria in the floor of the ulcer, in association with the typical histological picture and the presence of a tuberculous infection in close proximity would appear conclusive.

Tuberculosis of the vulva is usually considered to follow lymphatic or haematogenous spread from another focus in the body. The possibility of direct inoculation of the vulva has been mentioned by Guyer and Speiser (1946) and they quote Schmid as describing 5 cases where this followed intercourse with an infected husband. Jameson (1935) confirms that infection has been caused by inoculation in the experimental animal, although he refers primarily to tuberculosis of the vagina. Although haematogenous spread from the infected kidney cannot be excluded in the present case, infection by inoculation would appear a possibility. By the time the patient attended the antenatal clinic the kidney appeared to have sealed itself off but presumably the urine had been grossly infected with tubercle bacilli at some time. The ulcer dated from shortly after marriage and the patient admitted that she had found considerable difficulty in relations with her husband during her honeymoon. Although the site is unusual, she may well have suffered a defloration injury which failed to heal owing to urinary contamination with tubercle bacilli.

In addition to its rarity, this case is of

interest in that the presence of a small and apparently insignificant ulcer of the vulva led to the unmasking of an extensive tuberculosis.

CASE 2. Mrs. H. was a primigravida in her 24th year, who had been married for one year. Her last menstrual period commenced on 14th March, 1949, and she was admitted to hospital in her 27th week with a diagnosis of acute pyelitis. She was healthy in appearance and, with the exception of slight tenderness in the right renal angle, no abnormality was detected on examination. A catheter specimen of urine went solid on boiling. A hanging drop showed numerous pus cells and organisms. Culture identified the organism as *Bacterium coli*. Rapid amelioration followed a course of alkalis and Sulphatriad, 15 g. After one week the patient was discharged but a recrudescence of urinary symptoms 5 weeks later necessitated readmission. The urine again had the same characteristics. Because of the excessive albuminuria a 24-hour specimen of urine was cultured for tuberculosis and much to our surprise it was positive. Culture was repeated twice during the next 2 months and it was positive on each occasion. An intravenous pyelogram (Fig. 6) was performed and the radiologist reported a right-sided hydronephrosis and hydroureter with a small hazy opacity in the lower pole of the right kidney. When the urine report became available this opacity was suspected as the tuberculous lesion. On cystoscopy the bladder and ureteric orifices were normal. Chest was negative and extensive investigation failed to reveal another focus of tuberculosis. The Mantoux intracutaneous test was positive using 0.001 mg. of old tuberculin.

The patient remained in hospital throughout the remainder of her pregnancy. Persistent alkalization of the urine prevented a return of urinary symptoms. Two weeks after her expected date of confinement she commenced in labour and was delivered by low forceps. Severe urinary infection recurred 3 days after delivery. It responded to a further course of Sulphatriad, 15 g. She was transferred to the Royal Victoria Hospital, Belfast, on the 14th day to have a nephrectomy performed. A retrograde pyelogram (Fig. 7) showed a remarkable return towards normality in the right renal tract. It failed to reveal any defect in the sus-

pected area of the right kidney. It was decided to await the result of urine culture and when this proved negative nephrectomy seemed unjustified. The patient has been carefully followed during the six months since delivery. She has had no recurrence of urinary symptoms and her blood sedimentation rate is now 4 mm. in one hour (Westergren). Repeated urine culture has been negative for tuberculosis. It is intended to continue supervision during the next 2 years.

Comment. One expects to find a trace of albumen in urine in association with a urinary infection but the gross albuminuria in this case first aroused suspicion that the condition was more complex than it had appeared. The albuminuria was transient in character and was not due to blood—repeated microscopic examination of the urine failed to reveal more than an occasional red blood cell. Following observation and extensive investigation in hospital, before and after delivery, one felt that a diagnosis of pre-eclamptic toxæmia or chronic nephritis could be excluded. Alteri (1934) drew attention to the wide variations in the degree of albuminuria which may occur in renal tuberculosis during pregnancy.

The negative findings after delivery raise a doubt as to the validity of the diagnosis. Graebke (1921) considered that the presence of tubercle bacilli in the urine did not necessarily indicate a renal lesion and this was also the view of Wildbolz (1924) and Cunningham, Brown and Crabtree, as quoted by Norris (1931b). Pugh (1936) did not agree and stated: "The mere finding of tubercle bacilli in the urine is now, to me, positive proof of renal tuberculosis". Pugh suspected that Graebke might have mistaken the smegma bacillus for the tubercle bacillus in forming his opinion.

The writer considers that there are strong grounds for sustaining a diagnosis of renal tuberculosis in this case. Firstly, no extrarenal tuberculous lesion was

demonstrated from which a harmless bacilluria could arise. Secondly, the urine was positive on culture on no less than 3 occasions, at approximately monthly intervals. Finally, the patient had a positive Mantoux test in high dilution. Macder and Myers (1940) have a high regard for tuberculin testing in pregnancy while Pugh (1927) considers that pregnant women normally have a decreased sensitivity to the test—if this contention is correct it adds weight to the finding of a positive reaction using a dilution of 1 in 100,000. Although a renal tuberculous lesion may seal itself off and remain latent for a time it rarely heals spontaneously. Further manifestations of the disease may be expected to appear and the patient may require nephrectomy eventually.

Renal tuberculosis is a rare complication of pregnancy, Rivière (1945) having an incidence of 1 in 20,000 between the years 1925–1944. Many cases have been described in recent years, particularly by French writers, but few have reported more than 2 cases. Dozsa (1928) was able to study 27 cases, 48 per cent of which were first diagnosed during the puerperium. Cibert, Gayet, and Mafart (1944) reviewed 23 cases out of a total of 887 cases of renal tuberculosis. Day and night frequency, dysuria, pyuria, and, occasionally, haematuria are the early symptoms. These symptoms suggest a coliform pyelitis and, as this is relatively common, the more serious underlying lesion is liable to be missed. The writer considers that culture of a 24-hour specimen of urine should become a recognised step in the investigation of all cases of pyelitis in pregnancy. If this were a routine procedure the incidence of tuberculosis would probably be much higher than previously quoted.

CASE 3. Mrs. A. McC., aged 24, had been married 6 years. In 1944 she had a normal confinement but suffered from pyelitis during the puerperium.

In her second pregnancy in 1946 she had repeated attacks of pyelitis during pregnancy and the puerperium. She remained in hospital for 3 months after delivery and was then found to have tuberculosis of the right kidney. A nephrectomy was performed with rapid relief from symptoms. In 1949 frequency and dysuria returned, necessitating 2 short sojourns in hospital. Her last menstrual period commenced on 26th December, 1949. She was admitted to hospital on 8th February, 1950, complaining of left-sided renal pain, strangury and marked frequency (by day half-hourly and by night hourly). In appearance she was healthy and no abnormality was detected on general examination. A catheter specimen of urine contained a trace of albumen. The urine was sterile and was subsequently shown to be negative on culture for tuberculosis. An intravenous pyelogram showed a normal left renal tract. Urea concentration and the specific gravity range were normal. The chest was clear, clinically and radiologically. On cystoscopy the bladder capacity was only 4 to 5 ounces and further distension caused severe hypogastric pain. There was a granular basal cystitis, particularly marked round the right ureteric orifice. Oedema of the mucosa was marked but no ulceration could be seen. The left ureteric orifice gaped and did not show normal contraction after efflux of urine. These findings were considered sufficiently serious to justify termination of pregnancy and this was performed by dilatation and curettage on 3rd March. As was to be expected, the urinary symptoms persisted and became even more troublesome 2 months later. The cystoscopic findings remained unchanged and the urine remained negative on culture for tuberculosis. The patient was admitted to the Royal Victoria Hospital Belfast, and commenced a course of Streptomycin, 0.5 g. twice daily. A total of Streptomycin, 30 g., was given without improvement. At the time of writing the symptoms are still severe and life is a misery for the patient. As no alteration in the bladder capacity may now be expected, transplantation of the remaining ureter into the pelvic colon is being seriously considered.

Comment. There is little doubt that this patient had renal tuberculosis throughout her second pregnancy though she may have had a superadded coliform infection. The



FIG. 1.
CASE I. Tuberculous ulcer of vulva.



FIG. 2.
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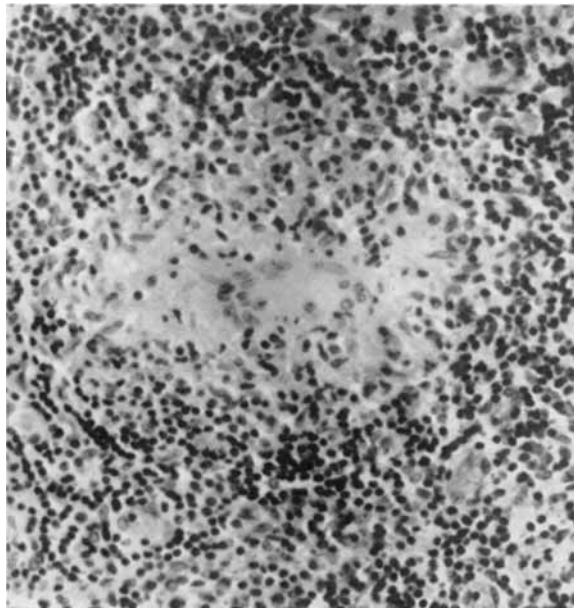


FIG. 3.
CASE I. Section taken from ulcer of vulva showing tubercle and giant cell with surrounding lymphocytic infiltration. $\times 300$.

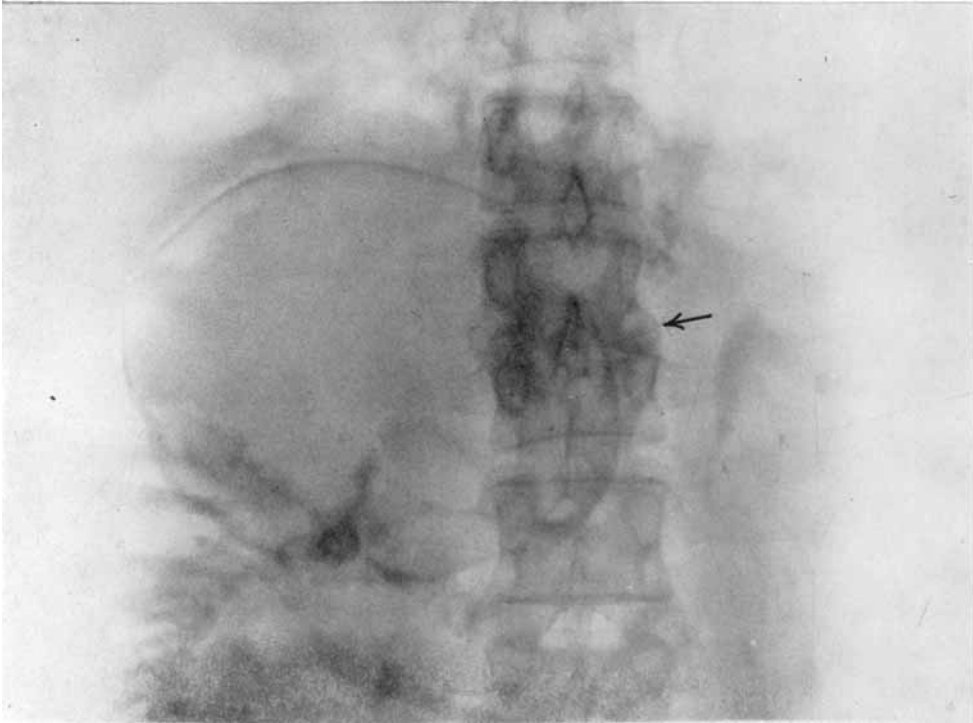


FIG. 4.

CASE 1. X-ray photograph taken 15 minutes after intravenous injection of Uroselectan B. There is no excretion of dye into the right renal tract. The arrow indicates the site of a healed tuberculous lesion of the lumbar spine.

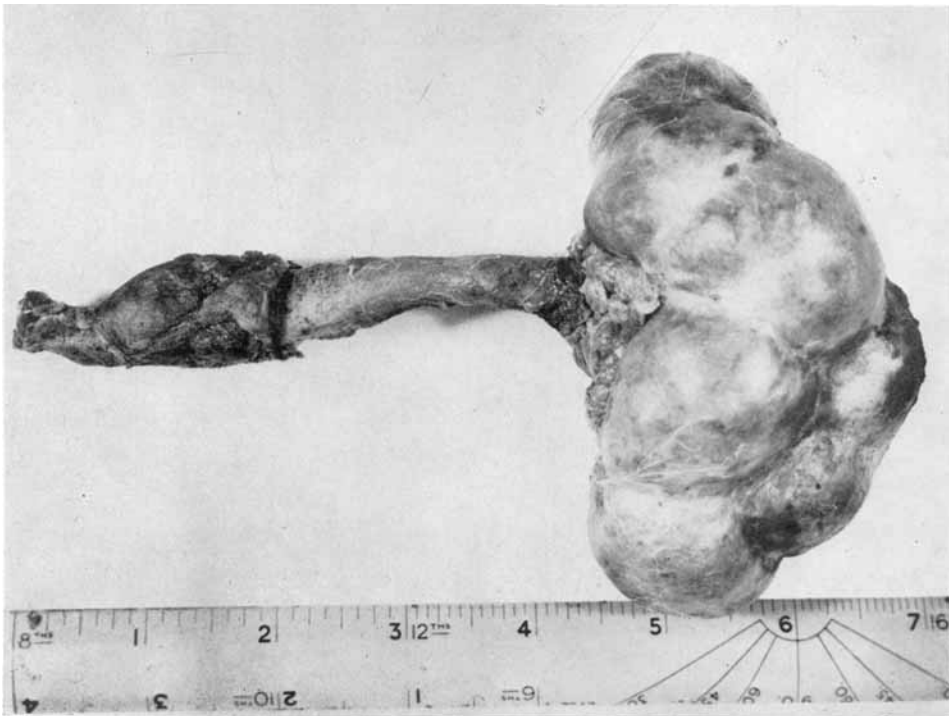


FIG. 5.

CASE 1. The right kidney showing a tuberculous pyonephrosis.

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obgynhistory.net

FIG. 6.

CASE 2. X-ray photograph taken 15 minutes after intravenous injection of Uroselectan B. There is a right-sided hydronephrosis. The arrow denotes a hazy opacity which was suspected of being a tuberculous focus.

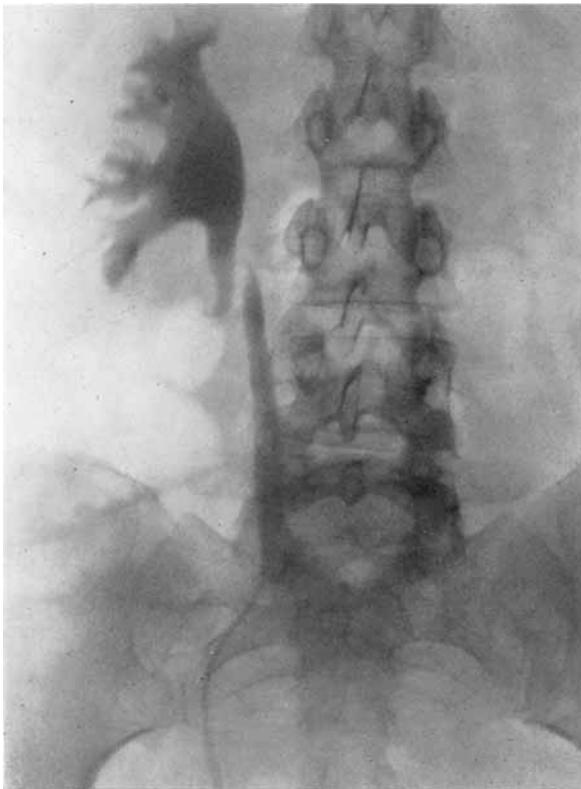
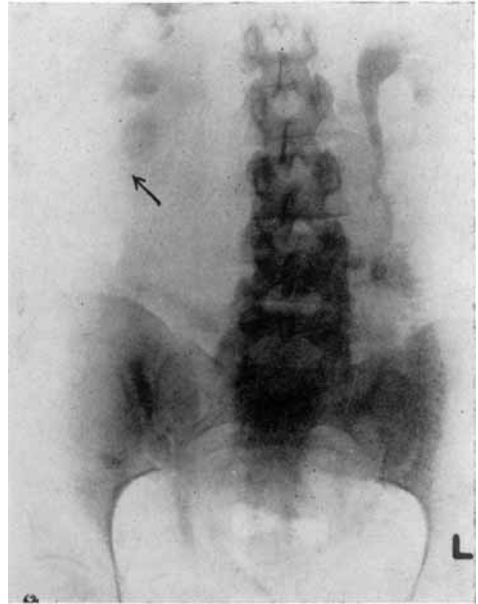


FIG. 7.

CASE 2. A retrograde pyelogram of the right kidney 2 weeks after delivery. The suspected area of the kidney appears normal.



FIG. 8.

CASE 4. X-ray photograph showing tuberculosis of symphysis pubis—before pregnancy commenced.



FIG. 9.

CASE 4. X-ray photograph showing tuberculosis of symphysis pubis—during 35th week of pregnancy.

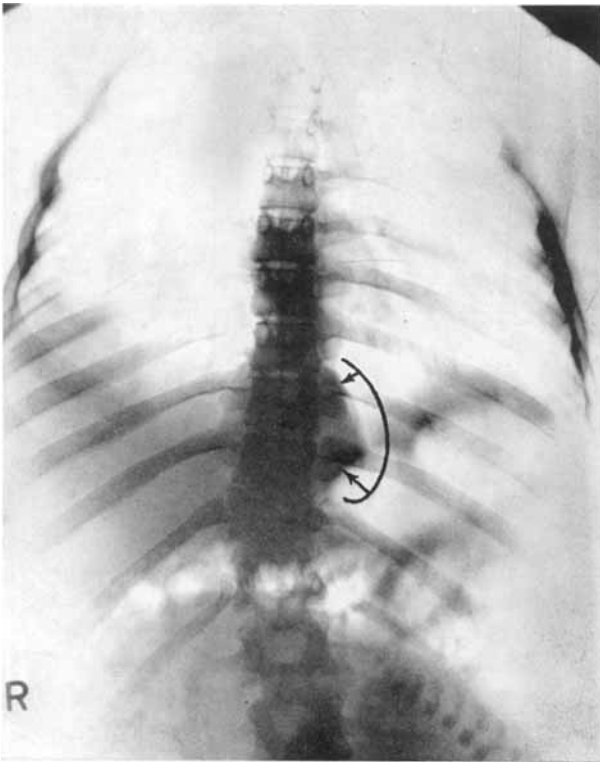


FIG. 10.

CASE 5. X-ray photograph of spine during 31st week of pregnancy. It shows tuberculosis of 10th and 11th thoracic vertebrae—the arrows illustrate the extent of the paravertebral abscess.

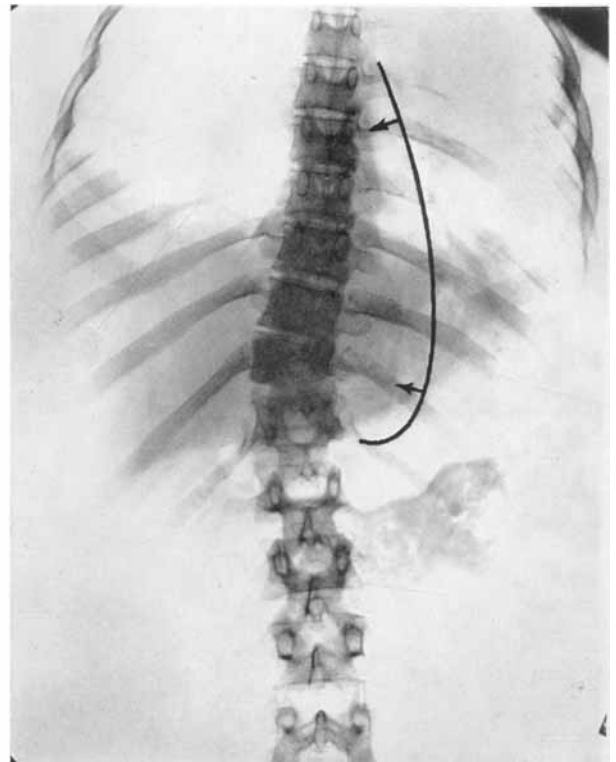


FIG. 11.

CASE 5. X-ray photograph of spine 3 weeks after delivery. The arrows show the increased extent of the paravertebral abscess.

true diagnosis remained unsuspected until long after delivery, i.e., until a diagnosis of pregnancy pyelitis could no longer be sustained and the persistence of symptoms necessitated further investigation. The delay in diagnosis permitted a dangerous spread of the tuberculous infection so that the bladder became extensively involved. After nephrectomy the bladder lesions retrogressed, as is their wont, but the resultant fibrosis caused a serious diminution in capacity. Though not a factor in this case, Streptomycin may cause similar cicatrization of a tuberculous bladder, a disadvantage noted by Nesbitt and Bohne (1948). Bladder fibrosis is an unsatisfactory condition to treat and, in time, may produce a hydro-nephrosis. As pregnancy was expected to aggravate the condition and as an active tuberculous lesion of the remaining kidney could not be excluded, termination seemed both justifiable and advisable.

Norris (1931a) gives Simon pride of place as the first to perform nephrectomy for renal tuberculosis (in 1871). Fullerton (1912), working in this Medical School, published a series of 22 cases treated by nephrectomy almost 40 years ago. Nephrectomy has now become the accepted treatment where no contra-indication to operation exists. Early diagnosis and immediate treatment are the keystones of success. Browne (1946), Rivière (1945), Gouverneur (1944), Curtis (1937a), Pugh (1936), Stevens (1924) and Borelius (1924) do not count pregnancy a contra-indication to operation, and indeed they consider early operation to be specially important because the lesion spreads with greater facility during pregnancy. Cibert *et al.* (1944) qualify their advocacy by stating that patients first diagnosed in the last trimester should be allowed to deliver themselves before operation is undertaken—with this the writer agrees. The first case reported in

this paper suffered no ill-effects as a result of the delay and in the second case subsequent events have shown that nephrectomy during pregnancy might have led to the removal of a normal kidney.

When nephrectomy is performed during pregnancy, the immediate risk of abortion and the subsequent risk of overloading the remaining kidney would appear to be considerable. Nevertheless many successful cases have been recorded in the literature. Stevens (1924) found reference to 12 cases, in which all mothers recovered and 6 had normal deliveries at term. Pugh (1936) reported 5 personal cases, all of whom subsequently delivered themselves normally.

One feels that the management would have differed in this case if nephrectomy had been performed early in the previous pregnancy or at least before serious involvement of the bladder had occurred. Matthew (1949) reviewed 265 patients who went through pregnancy after nephrectomy. 250 had normal pregnancies, 13 had pregnancies which were complicated in various ways, and 2 patients died. In the writer's experience, limited to 5 such cases, the remaining kidney withstood the strain of pregnancy well, but in each case the remainder of the urinary system was normal.

CASE 4. Mrs. M. McC., aged 28, had been married 8 years. She had a history of 4 normal confinements. In 1945 she spent a year in Forster Green Sanatorium, Belfast, with pulmonary tuberculosis. She was again admitted in 1947 with tuberculosis of the symphysis pubis, both sacroiliac joints and the upper lumbar spine. After a year's treatment she was discharged from the sanatorium, only to return in 1949 with a recrudescence of chest and skeletal lesions. Her last menstrual period commenced on 23rd May, 1949, and she remained at rest in the sanatorium throughout her pregnancy. Rapid extension of the disease in the symphysis pubis (Figs. 8 and 9) appeared to occur while the other lesions remained slowly progressive. An elective Caesarean section was planned to avoid

trauma to the pelvic girdle and, with this in view, the patient was transferred to the Royal Maternity Hospital, Belfast, on 21st February, 1950 (in the 39th week). Unfortunately labour commenced in transit, and on arrival the head was showing at the vulva. The patient delivered herself easily of a child weighing 5 pounds 12 ounces. She remained afebrile during the puerperium and returned to the sanatorium on the 10th day. Three months after delivery the medical superintendent of the sanatorium, Dr. A. Lynn, considered that slow progression of all the tuberculous lesions had continued and that pregnancy appeared to have played no part in this progression.

Comment. This patient was afflicted with multiple tuberculous lesions but one wishes to emphasize one aspect only, namely the disease as it affected the symphysis pubis. Tuberculosis of the os pubis is rare. Wirz (1929) quotes Peere-mans as finding 85 cases recorded in the literature between 1769 and 1924 but he does not mention how many of these were female and pregnant. Symptoms are late in onset and the pointing of a cold abscess frequently draws attention to the disease—Wiseman and Retan (1927) describe such a case. In the present case the disease remained silent in spite of the wide separation of the symphysis pubis which occurred during pregnancy. Labour was easy and the subsequent progress did not suggest that a flare-up had occurred. This was probably due to the fact that the baby was smaller than average and the patient had a large pelvis. Nevertheless a classical Caesarean section, using a para-umbilical abdominal incision, would appear to be a safer method of delivery. Jameson (1935) found reports of 11 cases in which rupture of a tuberculous pubis occurred during labour. The seriousness of rupture is emphasized when one realizes that 10 of these patients died.

CASE 5. Mrs. V. was a primigravida, aged 21, who had been married for 2 years. She gave a

history of left-sided pleural effusion in 1948. Her last menstrual period commenced on 10th June, 1949, and she first attended the antenatal clinic on 11th October. In appearance she was healthy and on radiological examination her chest was clear. She attended the antenatal clinic regularly and had no complaints until 9th January, 1950. She then stated that she had noticed difficulty in walking during the preceding week. She was found to have slight weakness of the extensor muscles of her legs, Rombergism and extensor planter reflexes. She had no symptoms referable to her spine but slight angulation and tenderness were elicited in the lower thoracic region. She was admitted to hospital at once for investigation. The radiologist reported a tuberculous lesion involving the 10th and 11th thoracic vertebrae with disappearance of the intra-vertebral disc and a small paravertebral abscess (Fig. 10). Within a few days spastic paralysis in extension had occurred, with loss of all sensation, including vibration, up to the level of the 12th thoracic segment.

The patient was transferred to Musgrave Park Emergency Hospital, Belfast, under the care of Mr. J. Withers. She was placed in a plaster bed and given Streptomycin, 0.5 g. twice daily for 6 weeks. Her condition deteriorated further and flexor spasms required the heavy use of analgesic drugs. Gross oedema of the vulva developed and the patient was incontinent of urine and faeces. A classical Caesarean section was performed on 10th March (at 39 weeks). The patient showed no improvement after delivery and the radiologist reported a remarkable extension of the paravertebral abscess (Fig. 11). On 17th April, Mr. C. A. Calvert performed a costo-transversectomy and drained a large paravertebral abscess which contained thin pus. A large epidural abscess, surrounded by granulation tissue, was also drained. No bony projections could be found. Streptomycin therapy was recommenced and continued until a grand total of 112 g. had been given. Six months after the onset the patient was still paralyzed up to the level of the umbilicus and was incontinent of urine and faeces. Some sensation had returned in the lower limbs but there was no radiological evidence of improvement. In the absence of more definite improvement at this stage of the illness the ultimate prognosis appears very poor.

Comment. Tuberculous spondylitis is one of the more frequent forms of non-pulmonary tuberculosis. Wilkinson (1942) had experience of 314 women with non-pulmonary lesions at Black Notley between 1930-1937. Of these, 128 had tuberculous spondylitis (37.6 per cent). Regarding the prognosis, he reports a mortality rate of 13.3 per cent and states that the results were good or moderately good following adequate treatment in 79 per cent of the cases. König and Poeck (1927) had experience of 94 cases of Pott's disease in Koenigsberg between the years 1918-1925. Twenty-nine of these were women of child-bearing age and 6 became pregnant before treatment had been completed. Of the 23 non-pregnant cases, 19 improved, while 5 of the 6 pregnant cases showed deterioration during the pregnancy. These writers considered that pregnancy should be terminated in all cases of Pott's disease and they went further in recommending subsequent castration doses of X-ray. This seems too drastic a view and it is contrary to the general opinion to-day. The writer has seen 3 patients with Pott's disease who were entirely unaffected by pregnancy and many similar cases have been reported.

Butler (1935), in his classical article, reviewed 801 cases of Pott's disease occurring in London hospitals. He found that 92 cases (11.4 per cent) developed paraplegia. To this he added 94 cases of paraplegia collected by Seddon, this giving a series of 186 cases. Paraplegia was prone to follow disease in the thoracic region, this being the site in 84.4 per cent of the cases. He extended the work of Sorrel-Dejerine and subdivided the paraplegia into 3 different types. Type I was early and transient, being due to abscess pressure, oedema, granulation tissue or disturbance of the segmental blood supply. Type II, also early, was permanent. It had the same aetiology and resulted from tardy or

inadequate treatment. Type III was late in onset, incomplete in character and progressive. It was due to bony deformity and fibrosis. In his series the incidence of the various types was as follows:

Type I, 39.4 per cent. Type II, 10.9 per cent. Type III, 49.7 per cent.

The present case would appear to be of the rare second type as there is almost no evidence of improvement 6 months after the onset and vibration sense in the lower limbs has been lost, a diagnostic point mentioned by Seddon (1935). As orthopaedic treatment was prompt and adequate one is bound to feel that pregnancy contributed in some way to the permanence of the paralysis. Indeed the rapid progress of the disease and the severity of its effects are altogether unusual.

Cases of late onset paraplegia in association with pregnancy have been described from time to time but the writer could find only one case of early paraplegia reported in the literature. This was by Fruhinsholz, Hartemann and Lacourt (1934) and had much in common with the present case. There was the same dramatic onset of paraplegia at the same time in pregnancy and the segmental distribution was similar. Gross oedema of the vulva occurred but it did not prevent delivery *per vaginam* following induction of labour at 36 weeks. The patient developed a massive bed sore and died 20 days after delivery. Autopsy revealed a miliary tuberculosis but no reference was made to the extent of the spinal lesion.

DISCUSSION

The problems of pregnancy and tuberculosis are extremely complex because both are liable to so many variations in themselves, and, as a result, their reactions one to the other are legion. Gonnet, Bansillon, and Joly (1936) have said "On voit l'influence considérable que peut avoir une

grossesse sur l'évolution du Bacille de Koch dans l'organisme et l'étendue de l'action allergisante, et parfois anergisante, qu'elle possède." For many years there appeared to be good reason for this comment and explanations were easy to find. The pregnant woman was prone to ill-health, the result of persistent vomiting, insomnia, anaemia, digestive disorders and calcium depletion, and ill-health was a useful ally for the tubercle bacillus. In addition, pregnancy caused tissue hyperaemia and increased capillary permeability, both of which should favour the spread of a tuberculous infection. However, personal opinions are deceptive and require the support of statistical analysis. In the case of pulmonary tuberculosis adequate numbers of cases are available for this purpose. Cohen (1943) and Turner (1950) speak from the experience of 100 and 718 cases respectively. They consider that their statistics show the course of pulmonary tuberculosis to be similar in pregnant and non-pregnant patients, provided that pregnant patients continue to receive adequate treatment. This has become the generally accepted view to-day and most authorities are against the termination of pregnancy except in special circumstances.

Cases of non-pulmonary tuberculosis are rare and no single observer has the opportunity to see sufficient cases to justify preparation of a statistical analysis. Scattered observations only are possible and this probably explains the wide diversity of published opinion, which varies from ultra-optimism to ultra-pessimism. One cannot draw conclusions from the 5 cases reported in this paper. Three of the patients went through their pregnancies with no apparent aggravation of their varied tuberculous infections. Another suffered the ravages of renal tuberculosis in a previous pregnancy and had to be

terminated before the effect of the present pregnancy could be accurately assessed. The 5th case, that of Pott's disease with paraplegia, did appear to follow a disastrous course but it is unfair to assume from this that pregnancy is necessarily dangerous in patients with Pott's disease, and that termination is the only safe procedure in such cases. It may be argued that the paralysis might have been less permanent if termination had been undertaken as soon as neurological signs appeared. There is insufficient previous experience to support or refute this assumption and theoretical considerations were not considered sufficient grounds for termination in a primigravida at 31 weeks when continuation offered the reasonable hope of a mature and healthy baby. Operation was planned at 36 weeks but doubts concerning the size of the baby caused delay until 39 weeks—the baby weighed 6 pounds at birth. The writer feels that every case of non-pulmonary tuberculosis in pregnancy requires individual consideration. Although the interests of the patient are occasionally best served by termination, the majority should be allowed to continue with every prospect of a successful outcome as regards the pregnancy and little possibility of an aggravation of their tuberculous infection.

It is early to speak of the value of Streptomycin in these cases as insufficient are available for assessment. Published reports have shown that Streptomycin is of doubtful value in bony tuberculosis and in Case 5 it appeared to make no difference whatsoever. However, other varieties of non-pulmonary tuberculosis may respond and, contrary to expectation, there appears to be little risk to the baby—Nesbitt and Bohne (1948) report a case receiving 192 grams of Streptomycin without any effect on the baby and similar cases have been reported recently. Silverman and Feinblatt

(1948) and Kane (1950) report cases of tuberculous meningitis treated successfully during pregnancy and Watson and Stowe (1948) were also successful in a severe case of renal tuberculosis.

Congenital tuberculosis is exceedingly rare, Whitman and Greene (1922) being able to find only 39 authentic cases in the literature. The risk would appear to be greater with non-pulmonary than pulmonary tuberculosis, particularly when the genital or urinary tract is involved. Four of the patients in this series were delivered of healthy babies. All the babies were given Bacilli Calmette-Guérin vaccination before leaving hospital and all continue to make good progress.

SUMMARY

Cases of skin, renal and bony tuberculosis in association with pregnancy have been described. Brief reference has been made to the literature as it applies to these infections. No conclusions may be drawn from such a small and varied series. In the writer's opinion the approach to non-pulmonary tuberculosis in pregnancy should not differ from that to pulmonary tuberculosis and, in general, pregnancy should be allowed to continue.

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NOTICE

NICHOLS FELLOWSHIP

1. The Council of the Royal Society of Medicine invites applications for a Grant of £225 per annum in aid of research to be carried out to advance knowledge in obstetrics and gynaecology, which will be awarded on the recommendation of the Council of the Section of Obstetrics and Gynaecology of the Society.
2. The place at which the work is to be carried out and an outline of the proposed research must be stated in the application.
3. A preliminary report on the progress of the research must be submitted at the expiration of the first six months.
4. The Fellowship will be awarded in the first place for a period of one year and, at the discretion of the Council, may be extended for a second year.
5. Applications must be received by the Secretary, Royal Society of Medicine, 1 Wimpole Street, London, W.1, by 31st March, 1951, and candidates must state their position with regard to call-up for Military Service.