EFFECT OF PITUITRIN IN MALIGNANT DISEASE

CLINICAL OBSERVATIONS

BY

E. W. RICHES, M.C., M.S., F.R.C.S.

ASSISTANT SURGEON TO THE MIDDLESEX HOSPITAL, AND TO THE HOSPITAL OF ST. JOHN AND ST. ELIZABETH

WITH A NOTE ON THE PHYSIOLOGICAL EFFECTS OF PROLONGED ADMINISTRATION OF PITUITRIN

BY

M. KREMER, B.Sc., M.B., B.S.

DEPARTMENT OF PHYSIOLOGY, MIDDLESEX HOSPITAL

In a preliminary paper published in October, 1931, entitled "The role of the pituitary in the aetiology of cancer,"¹ Susman discusses some theoretical and experimental observations on the effect of injections of posterior pituitary extract and ovarian extract, combined with a low carbohydrate diet, on malignant growths, and gives notes of seven cases treated on these lines. His conclusions were that "all the cases showed regressive changes in the tumours, and life appeared to be definitely prolonged." It was felt that such results required verification by trial in other cases, and accordingly it was decided to treat a number of cancer cases in the wards of the Middlesex Hospital on the lines suggested, and at the same time to observe the physiological effects of large doses of pituitrin.

Nine cases have been treated—five males and four females; the oldest was 86, the youngest 27, and the average age of the series 56 years. Cases were selected in which there was no doubt as to the diagnosis of malignancy; in six it has been verified histologically, and in the remaining three the clinical evidence was beyond dispute. As far as possible cases were chosen in which the growth was visible or easily palpable. The sites of disease included the mouth, glands of the neck, vulva, rectum, and prostate.

DETAILS OF TREATMENT

At the beginning of treatment the patients were put on a diet low in carbohydrate, a standard diabetic diet being taken as a basis, and modified slightly to meet individual needs. A detailed examination of the growth was made and recorded, the urinary output measured and the urine examined, and the blood pressure taken. In some cases electrocardiographic records were made. The dosage of pituitrin and theelin* (Parke, Davis and Co.) followed that given by Susman on general lines, but a certain amount of variation was introduced in the rate of increase of pituitrin and in the amount of theelin. The initial dose of pituitrin was 0.5 c.cm.; this was increased to 1 c.cm. twice daily by the fourth to the eighth day, and to 2 c.cm. twice daily by the seventh to the fourteenth day. In one or two cases as much as 4 c.cm. was given in one dose. The amount of theelin was kept constant at 0.3 or 0.5 c.cm., given in some cases once and in others twice daily. The initial injections were given subcutaneously, and then in most cases continued intramuscularly.

CASE I

Epithelioma of Floor of Mouth

J. D., male, aged 60. Ulcer in floor of mouth with large secondary deposits in the right submaxillary region. There was fluctuation in parts of the mass in the neck and in one area the skin was reddened and about to break down. The tongue was oedematous, making speech indistinct and the swallowing of solid food impossible. Blood pressure 148/100. Treatment produced no effect until the dose of pituitrin

*Pituitrin contained 10 international units per c.cm.; theelin contained 50 Doisy rat-units per c.cm.

reached 1 c.cm. b.d. With this dose he experienced severe pain, "like cutting with a knife," in the affected area; it started ten minutes after the injection and lasted for about thirty minutes, or until a sedative was given. There was also generalized pallor lasting for half an hour or more. Sometimes there was transient gripping abdominal pain five to ten minutes after the injection, but he was always constipated, and aperients were necessary. After one week's treatment the tongue was smaller and more mobile, making speech clearer and the swallowing of solid food possible. A sinus appeared in the neck, through which serous fluid was discharged, and the amount of discharge gradually increased as breaking down progressed; it was aided by the application of hot fomentations. When larger doses of pituitrin were given the post-injection pain was more severe and the pallor more marked; if theelin was omitted the pain was usually less severe. The urinary output fell from 70 oz. to 20 oz., but increased on omitting one or two injections; acetone and diacetic acid were present from time to time, and traces of sugar. The blood pressure fell to 115/75 and remained at about this level.

After three weeks' treatment the glands in the neck were definitely smaller, apparently owing to the free discharge, but little further change took place. Septic teeth were extracted gradually. After six weeks the growth in the mouth was unchanged and the general condition not so good. During the seventh week there was brisk arterial haemorrhage from the sinus in the neck, which was arrested by plugging with adrenaline gauze. Haemorrhage was repeated at intervals, and the patient died eight weeks after starting treatment. Post-mortem examination showed a fungating carcinoma in the floor of the mouth, with necrotic secondaries in the right submaxillary glands. There was myocardial degeneration, acute bronchitis and hypostatic congestion, and a septic spleen. Sections of the growth showed a keratinizing squamous-celled carcinoma.

The early reduction in the oedema of the tongue increased the patient's comfort, but subsequently the disease followed the usual course for such patients. It is impossible to say whether or no the treatment influenced the rate of breakdown of the glands; it had no effect on the primary growth.

CASE II

Carcinoma of Glands of Neck

C. C., male, aged 61. Two years and eight months earlier he had a mass of firm fixed glands in the left side of the neck; no primary focus was found. The glands were removed by block dissection and a radium collar applied. Section showed non-keratinizing, squamous-celled carcinoma. Recurrence took place after about two and a half years, and before starting treatment he had a fixed mass in the left side of the neck with threatening breakdown of the skin in the upper part. On the right side was a mass of firm mobile glands deep to the sternomastoid. The tongue deviated to the left on protrusion, but showed no induration or tumour. Blood pressure 160/85.

During treatment the local pain reaction was not marked, but he had some pain in the throat. Constipation was extreme. The glands on both sides of the neck became steadily larger, and fungation through the skin occurred on the left side; after a week it was possible to feel an extension of growth on to the base of the tongue on this side: he felt ill throughout, and resented treatment. The blood pressure fell to 140/75. After six weeks a left facial paralysis developed from upward extension of the glands, and the patient died eight weeks after starting treatment. Post-mortem examination showed extensive growth in the neck with deposits in the posterior third of the tongue, both lungs, and the lower end of the oesophagus; this latter may have been the primary growth. All the sections showed non-keratinizing squamous-celled carcinoma with an undifferentiated type of cell. Death was due to confluent bronchopneumonia.

CASE III

Epithelioma of Cheek

C. S., male, aged 64. There was a history of leucoplakia of the mouth for some years, and induration and ulceration of the mucous membrane of the left side of the cheek for some months. Induration extended back nearly to the

anterior pillar of the fauces, and there was a malignant ulcer near the bottom of the gingival groove opposite the sites of the molar teeth. The mouth could be opened only three-quarters of an inch. No glands were palpable in the neck. X-ray examination showed no evidence of bony involvement. He declined treatment by surgery or radium. Blood pressure 185/125.

Treatment produced no reaction until the dose of pituitrin reached 1 c.cm. b.d., when there was pallor coming on about ten minutes after the injection; there was at no time any considerable pain reaction. After six weeks the ulceration and induration had advanced, and the swelling on the outside of the face was more marked; enlarged glands were palpable in the left submaxillary region. He left hospital after eight weeks, but resumed treatment elsewhere for a further three weeks. The blood pressure had fallen to 175/110, and it continued to fall, the lowest point reached being 135/115. At the end of eleven weeks he had a left hemiplegia, of gradual onset, thought to be due to thrombosis. The growth was larger and approaching the surface of the cheek, and the glands in the submaxillary region were larger, firm, and fixed to the mandible. The patient died twelve weeks after starting treatment; no post-mortem examination was made. The total amount of pituitrin given in this case was 214 c.cm., and of theelin 27 c.cm.

The cause of the cerebral thrombosis could not be ascertained with certainty, but the possibility of its being due to lowering of the blood pressure must be entertained. He had, however, sustained a head injury five years previously, as a result of which there was a slight weakness on the right side.

CASE IV

Epithelioma of Vulva

M. M., female, aged 60. Nine months' history of vulval soreness, with frequency and difficulty in micturition. On the right side of the vulva was an ulcerated and bleeding growth, 3 inches by 1 inch, extending into both sides of the vestibule. There were enlarged glands in both groins. Section showed keratinizing squamous-celled carcinoma. Blood pressure 130/80.

Treatment produced some local pain—not sufficient to require the use of a sedative. The patient was always constipated. The blood pressure fell to 115/65, and the growth gradually increased in size. She died after five weeks' treatment; no post-mortem could be held.

CASE V

Epithelioma of Vulva

J. E., female, aged 61. History of a lump in the vulva for one year, and incision of an abscess in the left groin three weeks before admission. On the right labium was an ulcerated mass 3 inches by 1½ inches, extending around the posterior commissure to the left labium and anteriorly around the urethral orifice and into the vagina. In the left groin was an indurated mass discharging pus, and in the right several hard, enlarged glands. Section showed keratinizing squamous-celled carcinoma.

Treatment produced a sharp local pain reaction and generalized pallor; as the dose was increased the pain became more severe. No change took place in the primary growth, but the glands in the groin became larger, and new secondary glands developed. She was discharged home after six weeks' treatment, having received 59.5 c.cm. of pituitrin and 16 c.cm. of theelin.

In both this and the previous case the growth was readily observable; the changes that took place were all in the direction of extension.

CASE VI

Carcinoma of Rectum

T. K., female, aged 27. History of nine months' constipation, with the passage of blood and slime. On rectal examination there was a fixed, ulcerating carcinoma completely encircling the bowel lumen and extending down to within 2 inches of the anus. Laparotomy showed that the upper edge of the ring of rectal growth had already extended to the peritoneum, and there were enlarged glands in the mesorectum. No other secondary deposits were found. The growth

was considered inoperable, and a left inguinal colostomy was performed.

Treatment produced considerable local pain reaction and pallor. After six weeks the growth was larger on rectal examination, its lower margin reaching to within 1 inch of the anus. Treatment was stopped on account of the very poor general condition.

CASE VII

Carcinoma of Rectum

M. L., female, aged 27. Six months before treatment started she came to hospital on account of constipation, pain in the left lower abdomen, and frequency of micturition. There was a mass rising from the pelvis into the left side of the abdomen, and on rectal examination this was felt as an indefinite mass in the posterior and left wall of the rectum, extending in front to within 2 inches of the anus. There was evidence of a vesico-rectal fistula. Left inguinal colostomy was performed; the growth was felt to be spreading between the layers of the left broad ligament, and was deemed inoperable. After colostomy she improved at first, put on weight, and lost her urinary symptoms, but she returned in six months, with increasing pain in the back. The growth had increased slightly in size. Blood pressure 108/80.

Treatment caused at first a severe local pain reaction, even with a dose of only 0.5 c.cm. of pituitrin. Later on, with larger doses, the pain was not so severe (it was thought to be worse when no theelin was given); finally, there was no pain after the injection. The colostomy acted fairly regularly about twenty minutes after an injection, and there was considerable haemorrhage from the rectum, which diminished if the injection was omitted for a few days. After six weeks' treatment, spread over a period of nine weeks with intervals, the mass could still be felt in the left lower abdominal quadrant. By rectum could be felt a fungating carcinoma, extending around the whole circumference of the rectum. In front it reached to within about 1½ inches of the anus, and was fixed to the recto-vaginal septum; behind it reached about 3 inches from the anus, and was fixed to the sacrum. Considerable haemorrhage followed examination. There was x-ray evidence of secondary new growth in the sacrum, probably by direct extension. Blood pressure 100/70. This patient still felt that the injections were doing her good, and was anxious to continue them, although the growth had become larger.

Cases VI and VII were two rather similar examples of carcinoma of the rectum in young women. The growth continued to extend under treatment in each case, although there was in Case VII some evidence of more rapid breakdown in the centre, with resulting haemorrhage and extrusion of small sloughs.

CASE VIII

Secondary Carcinoma of Mesenteric Glands

C. B., male, aged 86. Nine years before he had had a colostomy and perineal excision of the rectum for carcinoma. Eight years later a mass of glands was excised from the left groin, and found to contain secondary columnar-celled carcinoma. Before starting treatment his condition was as follows: the scars in the perineum and groin were healed, with no evidence of recurrence; above the colostomy opening there was a mass of glands, palpable, firm, not tender, moving slightly on respiration, and apparently on the course of the inferior mesenteric vessels. The colostomy acted regularly twice daily. Blood pressure 190/80.

Treatment produced some aching round the waist, but no definite local pain reaction. With a 1 c.cm. dose of pituitrin the colostomy acted regularly five to ten minutes after the injection. After eighteen days' treatment the blood pressure was 180/85. After ten weeks' treatment the abdominal tumour was unchanged, the general condition was not so good, and he complained of pain in the lower chest, for which no physical signs were found. He was getting weaker, and treatment was stopped, and subsequently he felt more comfortable. Four weeks later the abdominal tumour was *in statu quo*. Blood pressure 130/60.

This was a case of slowly growing carcinoma, which had gone for eight years before a recurrence appeared. Treatment had no apparent effect on the subsequent course of the disease.

CASE IX

Carcinoma of Prostate

F. H., male, aged 64. Six months previously permanent suprapubic drainage had been established elsewhere for carcinoma of the prostate. On examination the prostate was moderately enlarged, stony hard and nodular, and infiltrating the base of the bladder; the median sulcus was obliterated. X-ray of the pelvis showed no definite bony secondaries. He complained of considerable pain passing down the backs of both legs, and of irritation in the perineum. On the personal suggestion of Dr. Susman it was decided to give him a short course of treatment, with the idea of relieving his pain. He was treated for ten days, during which time there was no local pain reaction, and no alteration in the amount of pain he suffered. He died eleven weeks after starting treatment. Post-mortem examination showed the prostate filled with scirrhous carcinoma spreading into the seminal vesicles and pelvic cellular tissue, and bony secondaries in the sacrum.

Injections of pituitrin up to 2 c.cm. twice daily, with theelin 0.3 c.cm., had no effect in alleviating the pain.

COMMENTS

Except in Case I, where there was a local diminution in the oedema of the tongue overlying the growth, there was no beneficial effect which could be attributed to the injections of pituitrin and theelin. All the cases followed the usual course of the disease for the particular type of growth. In no case was life prolonged, nor was there regression of any of the growths.

PHYSIOLOGICAL EFFECTS OF PROLONGED ADMINISTRATION OF PITUITRIN

The cases described above were investigated from the following points of view: blood pressure—immediate and remote effects; electrocardiographic changes; onset and distribution of pallor and other vessel changes; changes in urinary volume and presence or absence of glycosuria; and effects on the bowels.

Blood Pressure

In most of the cases the immediate effect was to lower the blood pressure, the systolic being more affected than the diastolic. The extent of the drop varied from nothing up to 50 mm. systolic. The maximum fall of diastolic pressure was 30 mm.

Typical figures were as follows:

Initial blood pressure: 180/130—injection 2 c.cm. pituitrin intramuscularly. After 5 minutes, 175/130; after 10 minutes, 160/120; after 15 minutes, 150/115; after twenty minutes, 150/115; after thirty minutes, 145/115; after forty minutes, 150/110; after fifty minutes, 160/110; after sixty minutes, 165/120.

In two of the patients a rise of blood pressure was obtained after the first injection, but it was of negligible dimensions—in one case from 185/120 to 190/120, and in the other from 130/75 to 135/80. Both these cases on the following days showed a fall of blood pressure similar to that noted above, so that the rise obtained on the first occasion was doubtless emotional in origin. In those cases in which pituitrin was given for a long period the resting level of the blood pressure showed a tendency to fall. It is impossible to say to what extent this fall was due to the low diet, the partial rest in bed (very few were entirely confined to bed), or the pituitrin. As an example of the extent of the effect, it may be mentioned that in one case the blood pressure fell from 190/80 to 130/60 in three months, and in another from 160/85 to 140/75 in a month. These results differ from those obtained by Sacks.² This worker, using doses up to 1 c.cm. subcutaneously in man, found minute rises, while doses of 1/40 to 1/20 c.cm. intravenously produced immediate rises, after one to three minutes, of 5 to 15 mm. systolic pressure.

Electrocardiographic Effects

Records were taken before the administration of pituitrin and at times varying from one minute to forty-five minutes afterwards. In most cases lead II only was employed, but in some of the later ones all three leads were recorded. The records showed very little change as the result of pituitrin administration. There was little effect on heart rate, some subjects quickening to the extent of two beats a minute, others slowing to a similar extent. There were no changes in rhythm. Those graphs which showed any changes had a slight increase in amplitude of all the waves, this being most marked in P and T waves, but little else was seen. There were no ectopic beats. Gruber and Kountz, using *intravenous* doses of pitressin of a similar amount per kilogram body weight in the dog, found marked changes in the shape and rhythm of the curves.³ Goldenberg and Rothberger⁴ also obtained marked electrocardiographic changes in animals given intravenous injections. These they attribute to constriction of the coronary arteries by pitressin. The absence of such changes in our records, even after doses of 4 c.cm., may be due to the different route of administration and the slower absorption into the circulation.

Changes in Skin Vessels

Pallor came on very soon after the injections in all cases. It took about five to ten minutes to develop, and lasted twenty to thirty minutes. It was not found that the latent period of development or the duration of the pallor was altered in any way during the course of the investigations. Pallor was most marked in the face, nose, and ears, but was distinct in the skin of the arms and trunk. In several subjects it was noticed that between the injections the blush area on the face and nose was a good pink colour, thus giving the patient a very deceptive air of well-being. This was not due to any increase of haemoglobin, as was shown by blood counts and by the anaemic appearance of the mucous membranes. It was thought that the flush was due to dilatation of the skin vessels in this area of a paralytic nature, following the repeated firm constriction.

Urinary Volume

It is well known that intramuscular injection of pituitrin in the normal subject has an anti-diuretic effect.⁵ In these investigations a decrease in the volume of urine excreted, though not to the extent expected from the effects seen on normal subjects, was observed. This effect was not maintained as the treatment progressed. This is in accord with the diminution in effect of a given dose of pituitrin noticed in subjects with diabetes insipidus. In two cases faint traces of sugar appeared in the urine at the beginning of treatment, but this disappeared later. It must be remembered in this connexion that the patients were on a Beaumont and Dodds diabetic diet XI,* and this would counteract any tendency to glycosuria. In one case, though 2 c.cm. of pituitrin were given twice daily, the urinary volume was 40 ounces or less on only five days out of thirty. In another case the urinary volume on 2 c.cm. twice daily was less than 40 ounces on seventeen occasions out of twenty-two, and on reduction of the dose to 1 c.cm. twice daily it was below 40 ounces on three occasions out of fifteen. The urine was never concentrated to a specific gravity of more than 1020.

Bowels

The effect on the bowels was surprisingly slight. Only two patients, both with colostomy, showed stimulation of bowel movement. In both an evacuation occurred

* This consists of carbohydrate, 54 grams; protein, 108 grams; fat, 114.9 grams—total calories, 1,679.

ten to twenty minutes after each injection. The other patients were constipated in spite of the injections, and required the same dose of aperients during as before treatment. Those patients having normal evacuation were unaffected by the treatment. Only one patient complained of transient abdominal griping following the injections, but this reaction was inconstant.

We are indebted to Mr. Victor Bonney and Mr. A. E. Webb-Johnson for permission to treat and observe some of their cases, and to Dr. Stanley White of Messrs. Parke, Davis and Co. for generous supplies of pituitrin and theelin. The urine analyses were carried out in the Courtauld Institute of Biochemistry, Middlesex Hospital. Lieut.-Colonel J. M. Weddell, R.A.M.C., kindly continued the treatment in one case, and allowed us to see the patient subsequently.

REFERENCES

- ¹ Susman, W.: *British Medical Journal*, 1931, ii, 794.
² Sacks: *Heart*, 1924, xi, 353.
³ Gruber and Kountz: *Journ. Pharm. and Exp. Therap.*, 1930, xl, 253.
⁴ Goldenberg and Rothberger: *Zeit. ges. exp. Med.*, 1931, lxxvi, 1.
⁵ Douglas and Priestley: *Human Physiology*, 1924, p. 207.

SEPTIC FOCI AND NORMAL LABOUR

BY

HELEN LEYTON, M.D.

Though it is not always easy to say what constitutes a normal labour no one could deny that some of the cases met with in the Oxford district are both normal and ideal. One comes across women who have an almost painless first stage of labour and only some acute discomfort and a few expulsive pains in the second and third stages. If these were the usual cases the question of supplying anaesthetics in normal labour would not arise. The present investigation was undertaken to try to find out what there was in environment, physique, or general conditions which gave one normal woman an easy labour while others, apparently as normal, suffered so acutely.

With this object in view an exhaustive analysis was made of the notes of cases taken in during the last two years at the Oxford Maternity Hospital. Each detail was tabulated, and a comparison made between the short and long labours. From this it was found that one factor stood out prominently as being associated, not with short, but with long labours. This was the presence of a septic focus in the mother, as indicated either by a note made by the ante-natal doctor or by a rise of temperature during the puerperium.

After the notes had indicated this point, the hospital cases for the five years 1926 to 1930 inclusive were tabulated as to age, parity, pelvic measurements, and weight of baby (to cut out all cases of disproportion), presentation, the time of the first stage and the total length of labour respectively, and the presence or absence of any evidence of a septic focus in the mother. All cases of disproportion, malpresentation, placenta praevia, and abnormality other than sepsis were excluded, and only L.O.A. cases considered. (For the last two years R.O.A. cases are given for comparison.) These normal cases were divided into four groups—country primiparas and multiparas and town primiparas and multiparas—in order to see if the country women suffered less than their town sisters, as is the general impression of those working among them.

The B.M.A. standard was at first taken as indicating a + temperature, but it was soon found that this did not cover the cases in which notes had been made of a septic focus during the ante-natal period. Many of these cases showed a rise to only 99° F. on three or more occasions during the puerperium, and this latter standard was therefore taken as indicating the presence of some chronic septic process, even when no note had been made

of such by the ante-natal doctor. This is again, of course, a purely arbitrary standard, and probably all cases with a rise of temperature to 99° should be suspect. However, for the purposes of this investigation a rise of temperature to 99° on three or more occasions during the puerperium (usually ten days) is that called a + T°, although it is likely that a number of cases in which there was a more or less dormant infection are included in the negative cases.

The most common chronic infections noted were:

Septic teeth	17.7 per cent.
Pyelitis	2.9 "
Chronic rheumatism	2.5 "

while a previous septicaemia, or mastitis and gonorrhoea, all amount to about 1 per cent. of the total cases.

Since the average figures for each group do not indicate the frequency with which short labours occur, some of the actual figures are given.

TABLE I.—Total Percentage of + T° Cases. Among Town and Country Cases (all Types)

	Town	Country	Town	Country
1926	19.26	6.0	1929	62.9
1927	13.8	13.0	1930	45.2
1928	20.0	19.5		47.7

TABLE II.—Normal L.O.A. Cases, 1926

	Average Time, 1st Stage	Total Time	Age	Weight of Baby
Town primiparas (42 cases):				
14 + T°	18 hours	19½ hours	24	7.4 lb. (Conj. 7)
28 - T°	11½ "	15½ "	23½	7.4 lb. (Conj. 7)
Country primiparas (28 cases):				
8 + T°	18 "	20 "	23	8 lb. (Conj. 7)
20 - T°	10 "	11 "	22½	6.7 lb.
Town multiparas (46 cases):				
3 + T°	8½ "	9½ "	31	7.4 "
43 - T°	5½ "	6½ "	22½	7.2 "
Country multiparas (24 cases):				
All - T°	6 "	7 "	28	7.4 "
Town Primiparas {	Of the - T°s 2 were under 5 hrs. 1st stage, 6 hrs. total.			
	2 " " 6 " " " 7 "			
	All + T°s were over 10 " " 11 "			
Country Primiparas {	Of the - T°s 1 was under 4 hrs. 1st stage, 5 hrs. total.			
	1 " " 5 " " 6 "			
	2 " " 6 " " 7 "			
	2 " " 7 " " 8 "			
	Of the + T°s 1 was " 11 " " 14 "			
	All others were over 14 " " 16 "			
Town Multiparas {	Of the - T°s 2 were under 2 hrs. 1st stage, 3 hrs. total			
	1 was " 3 " " 4 "			
	9 were " 4 " " 5 "			
	6 " " 6 " " 7 "			
	Of the + T°s 1 was " 4½ " " 6 "			
	Others were over 10 " " 11 "			
Country Multiparas {	Of these 1 was under 50 min. 1st stage, 1 hr. total.			
	3 were " 2 hrs. " 3 "			
	3 " " 3 " " 4 "			
	6 " " 6 " " 7 "			

TABLE III.—Normal L.O.A. Cases, 1927

	Average Time 1st Stage	Total Time	Age	Weight of Baby
Town primiparas (60 cases):				
16 + T°	15½ hours	17 hours	25½	6.13 lb.
44 - T°	9½ "	11½ "	23½	6.12 "
Country primiparas (32 cases):				
7 + T°	11½ "	13 "	23	7.0 "
25 - T°	7 "	10 "	20	6.13 "
Town multiparas (58 cases):				
3 + T°	11 "	13½ "	33	7.11 "
55 - T°	6½ "	7½ "	28	7.0 "
Country multiparas (41 cases):				
4 + T°	14½ "	16 "	30	7.11 "
37 - T°	5 "	6 "	30	7.0 "