

# Peyronie's disease — a perspective on the disease and the long-term results of radiotherapy

I. M. VILJOEN, L. GOEDHALS, M. J. DOMAN

**Abstract** From 1966 to 1988, 98 of 108 patients with symptomatic Peyronie's disease received radiotherapy at our institution.

In 11 of 61 patients (18%) who attended the clinic regularly for follow-up for longer than a year, new lesions distinct from the original lesions developed. This confirms that there is progression of the disease in a substantial number of cases after treatment.

Long-term follow-up over an average of 111,5 months was achieved by means of a questionnaire in 47 of the 98 cases (48%). Forty-one of these patients (87,2%) had sexual intercourse after radiation. Twenty-eight of the 41 (68,3%) still have intercourse. Their average age at present is 59,6 years while the average age of the 13 patients (31,7%) not having intercourse is 70,9 years. The decline in sexual activity is thus age-related. Twenty-one of 25 patients (84%) experienced relief from pain, and angulation of the penis improved in 17 of 44 patients (38,6%) after radiotherapy. Radiotherapy may therefore be of benefit to patients with active Peyronie's disease and should be investigated in a randomised controlled study.

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Peyronie's disease, first described in 1743,<sup>1</sup> has been grouped with Dupuytren's contracture, aponeurotic plantar fibrosis and knuckle pads as one of the fibrosing diseases in which 'a burst of fibroplasia' is the common denominator.<sup>2</sup> The aetiology is unknown. The increased density of the fibroblasts inhibits their capacity to produce type I collagen.<sup>3</sup> The normal production ratio of type I: type III collagen is disturbed and excessive amounts of type III collagen are deposited.<sup>3,4</sup>

A dominant gene with high penetrance appears to be involved in these diseases as they are more prevalent in Anglo-Saxon populations.<sup>2,3</sup>

In Peyronie's disease the lesion first appears as a plaque in the vascular areolar connective tissue sheath that separates the corpus cavernosum from the tunica albuginea.<sup>1</sup> The plaque may extend into the corpus cavernosum.<sup>5</sup>

The true incidence of Peyronie's disease is unknown but it is not an uncommon disease.<sup>5</sup> The natural history is vague<sup>6,7</sup> but it is a self-limiting disease; the active stage apparently lasts from 12 to 18 months.<sup>5</sup> The plaque may recede spontaneously and even disappear in a few instances.<sup>8</sup> Alternatively it regresses to an inelastic scar.<sup>5</sup> The extent and location of the lesion relative to the erectile tissue determine whether the patient is a sexual cripple or not. Sexual disability is the only indication for treatment.

The treatment options are varied and include medical treatment with potassium para-aminobenzoate<sup>8</sup> and

vitamin E,<sup>5</sup> steroids,<sup>9</sup> ultrasound,<sup>10</sup> radiation<sup>7,11,12</sup> and surgery.<sup>5,13,14</sup> Since 1966 orthovoltage radiotherapy has been used at our institution. Varying reported success rates<sup>7,11,12</sup> and the suspected risk of damage and further fibrosis as a result of radiotherapy<sup>15</sup> have prompted us to evaluate our long-term results.

## Patients and methods

From 1966 to 1988, 108 patients with symptomatic Peyronie's disease were registered at our combined urology and radiotherapy clinic. The mean patient age at registration was 53,7 years (range 19 - 79 years) with symptoms present on average for 8,1 months (range 1 - 24 months). Ten patients had had local steroid injections before registration but none had undergone surgery. Virtually all the patients had taken an anti-inflammatory agent before they were seen by us. Twenty patients (18,3%) had Dupuytren's contracture. There was no other associated abnormality. All our patients were white.

Ninety-eight patients were irradiated. Forty-seven received 2 500 cGy in 10 x 250 divided doses over a 12-day period. Forty-two patients had doses varying from 1 500 to 3 500 cGy with an average of 2 363 cGy. Five patients had the initial dosage of 2 500 cGy supplemented at a later stage by 1 000, 1 250, 1 400, 1 500 and 2 000 cGy respectively. Four patients had 1 250, 1 250, 1 250 and 2 100 cGy respectively added at a later stage to an initial dosage of 1 500, 1 750, 2 250 and 2 400 cGy respectively. Nine patients thus received follow-up radiotherapy to a maximum total dose of 4 500 cGy.

Radiation was applied by using a 250 KV unit with a thoraeus filter and an HV<sub>1</sub> of 3 mm copper. The applied dose of the single field 250 KV beam was 250 cGy with the standard fractionation being 10 x 250 cGy daily. Field sizes varied from 3 x 2 cm to 7 x 4 cm depending on the extent of the Peyronie's disease palpated. Normal tissue was shielded by 3 mm lead shielding. The penis was placed on a 3 mm lead sheet thus shielding the deeper-lying normal tissue, e.g. the testes and scrotum or suprapubic region depending on the position of the penis during radiation. The field edges and size were defined using a 3 mm lead cutout.

To assess the long-term results of radiotherapy a questionnaire was formulated in accordance with accepted guidelines.<sup>16</sup> These were mailed to all the patients. To validate the reliability of the questionnaire<sup>17</sup> 10 patients, chosen at random, were telephoned approximately 6 weeks after the receipt of the 30th completed questionnaire; the questions were repeated to them. The correlation between their answers and those in the questionnaire satisfied us as to the questionnaire's test-retest reliability.

## Results

Of the 98 patients, 10 were lost to follow-up. Eighty patients attended the clinic regularly for an average of 33 months (range 2 - 98 months) after treatment. Sixty-one attended for more than 12 months.

Surprisingly, in 11 of 61 (18%) patients, new lesions, palpably distinct from the original lesion, developed. In

Departments of Urology and Radiotherapy, University of the Orange Free State, Bloemfontein

I. M. VILJOEN, M.S.C., M. MED. (UROL.), F.C.S. (S.A.)

L. GOEDHALS, M. MED. (RAD. T.)

M. J. DOMAN, B.SC. SCI. NAT.

3 cases the lesions were associated with symptoms and these patients were further irradiated. The doses respectively were 1 250 cGy added to the initial 2 250 cGy, 2 000 cGy added to the initial 2 500 cGy and 1 000 cGy added to the initial 2 500 cGy. Only the latter patient improved after the second course of radiotherapy. The remaining 8 patients did not have symptoms as a result of the new lesions. In 5 patients the lesions remained static and in 3 became smaller.

Of the 98 questionnaires mailed to the patients, 53 (54%) were returned. Forty-seven (88,3%) were adequately completed. Eight of the patients completing the questionnaire did not attend the clinic after treatment. The period of follow-up was extended from an average of 33 months to an average of 111,5 months (range 11 - 273 months) by the questionnaire. The average age of these 47 patients was 55,1 years (range 27 - 70 years) at registration and is at present 64,3 years (range 39 - 80 years).

The subjective assessment of the quality of erection after radiotherapy revealed that 17 of 43 patients (39,5%) thought it normal; 3 (7%) judged it to be improved. It remained the same in 9 cases (20,9%) and deteriorated in 14 (32,6%). Angulation of the penis improved in 17 (38,6%) of 44 cases, remained the same in 16 (36,4%) and became worse in 11 (25%). A dramatic reduction in pain occurred in 21 (84%) of 25 cases. Pain levels remained the same in 3 patients (12%) and worse pain was experienced by 1 patient (4%).

## Discussion

Peyronie's disease is a self-limiting disease with the active stage lasting from 12 to 18 months.<sup>3</sup> The lesion does not cause symptoms in the majority of cases. It regresses spontaneously in about 50% of cases<sup>14</sup> and may even disappear completely.<sup>6</sup> Alternatively it forms an inelastic scar.<sup>5</sup> The size of the scar, its position and the extent of the involvement of the corpus cavernosum determine the degree of erectile disability.

Three categories of patients are recognised:

1. Those without symptoms. They have discovered the lesion by chance and many of them are afraid that it may be cancer. They need reassurance only.

2. Patients with active lesions producing symptoms. Their history is usually a year or less. They have pain and/or bending of the penis with erection interfering to varying degrees with sexual intercourse. This may have a psychological impact<sup>11</sup> and may lead to impotence.

3. Patients with the end stage, the inelastic scar. Strictly speaking they do not have but have had the disease and are left with mechanical disability.

One in 10<sup>13</sup> to 1 in 3<sup>5</sup> patients come to surgery. Three main surgical options exist: (i) excision of the lesion followed by a replacement graft;<sup>5</sup> (ii) the Nesbit procedure;<sup>13</sup> and (iii) the insertion of a prosthesis.<sup>14</sup> The results of these procedures are controversial.<sup>5,13,14,18</sup> Reasons for this include subjective assessment of the results, lack of properly documented long-term results and the use in some instances of adjuvant treatment, for instance vitamin E.<sup>15</sup>

There is however general agreement<sup>5,13,14</sup> that surgical correction of the erectile deformity must be deferred for at least a year after diagnosis. Surgery is therefore, by implication, reserved for category 3 patients. What must be done in the meantime? What is the preferred treatment for category 2 patients? It has been stated that Peyronie's disease is fully manifested when the patient is first seen.<sup>6</sup> We have found new lesions developing in 11 of 61 (18%) patients. We accept this as confirmation that there is progression of the disease in a substantial number of patients after they have first been seen. The objectives of treatment in category 2 patients must therefore be, firstly, to arrest the progression and, secondly, to alleviate the symptoms of the disease.

Since it is a self-limiting disease, arrest of progression will be extremely difficult to prove. There is a natural tendency for the symptoms to resolve.<sup>7</sup> The justification for treating patients in category 2 is that the relief of symptoms can be accelerated in a substantial number of cases<sup>11</sup> especially when the symptomatology is of short duration. The treatment selected must be effective with a low risk of complications. It must not interfere with subsequent surgical therapy should that become necessary. Radiation fibrosis has been considered by some<sup>15</sup> to hamper surgery while others have not found this so.<sup>12</sup> In comparing the results of various reports on orthovoltage therapy, differences in radiation dosage must be considered. Our patients received an average dose of 2 500 cGy in 10 fractions over a 12-day period. Two recent reports mentioned 600 to 1 600 rad with an average dose of 900 rad over a 10 - 90 day period<sup>12</sup> and a single exposure dose of 250 to 600 roentgens.<sup>7</sup>

In our series, 21 of 25 patients (84%) experienced pain relief. Bending of the penis improved in 17 of 44 cases (38,6%). Forty-one of 47 patients (87,2%) had sexual intercourse following radiotherapy and 28 of these (68,3%) still have sexual intercourse 99,2 months after treatment. Their average age is 59,6 years. The decline in sexual activity is age-related since 13 of 41 (31,7%) patients who have ceased sexual activity are on average 70,9 years old and 129,9 months post-treatment.

We conclude that the lack of randomised controlled studies hampers treatment decisions in Peyronie's disease. The symptomatic patient with end-stage disease clearly needs some form of surgery, be it the Nesbit procedure, dermal graft inlay or the insertion of a prosthesis. We are concerned with the patient with the active lesion. He deserves treatment and not only the advice to persevere till the lesion has burnt itself out at which stage surgery may be contemplated! Our advice to these patients is to have radiotherapy. It is a relatively short course of treatment done on an outpatient basis. More than 80% of our patients experienced relief from pain. Improvement of angulation was noted in about 40% of early cases. In the long term, radiotherapy does not appear to affect the patient's erectile ability.

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