offers in their clinical guidelines, in the section of deterministic effect control, which below an estimated dose in the skin of 2–5 Gy, permanent deterministic effects would be reasonably rare.\(^4\)

In order to characterize the dose received by the patient, the following variables are used: effective dose (mainly related to the probability of stochastic effects and measured in Sieverts); the equivalent dose in a specific organ (related to deterministic effects in that organ, also measured in Sieverts); and the dose-area product, which is an alternative and less precise estimate of the radiation received by the patient and the risk involved in it.

One way of measuring the equivalent dose in the skin (which in the case of the PNL is the most radiosensitive organ) is using thermoluminescent dosimeters (TLDs) placed on the skin during the intervention. The use of radiometers is considered less reliable than the TLDs and the dose-area product. The use of radiographic or radiochromic plates provides a graphical approach of the exposed anatomical regions and the magnitude of such exposure.

Previously, some authors have conducted dosimetry studies during the NPL, although none of them in our country. In 10 studies, they use TLD dosimeters for measuring, 2 use the dose-area product, and one uses radiometers. Of these studies, only 7 measure the dose received by the patient, ranging from 0.59 mSv to 250 mSv.\(^5\)\(^-\)\(^8\)

The aim of this study is to characterize the radiation doses received by the patient during the NPL in our center. We conducted a prospective, non-randomized, descriptive study of 7 consecutive patients undergoing PNL at our institution during 2011.

In these patients we measured: the maximum skin dose in the most irradiated area with TLD, the irradiated area by radiographic plates, the total fluoroscopy time, the dose-area product indicated by the team, and the technical data of the procedure.

The parameters obtained are summarized in Table 1 The average maximum skin dose, for 5 patients, is 116.2 mSv (±88.4), showing a larger dispersion (coefficient of variation: 76.1%) than the fluoroscopy time (24.5%) and the dose-area product (28.7%). This means that the parameter generally accessible to the urologist (dose-area product of the team) does not always behave as a good predictor of the maximum dose in the skin, which is the one indicating the risk of deterministic effects that we intend to evaluate.

In our case, the fluoroscopy time, the dose-area product, and the maximum dose in the skin obtained are comparable to those published in the literature.

In our study, the maximum dose in the skin received by the patient is within the range of reasonable safety, so the PNL seems a safe procedure from the point of view of the radiation received by the patient.

References

9. A. Husillos\(^a\)\(^,\)\(^b\), J. Mayor de Castro\(^a\), F. Boyano\(^b\), G. Ruiz\(^b\), J. Aragón\(^a\), G. Bueno\(^a\), J. M. Diez\(^a\), F. Sierra\(^b\), C. Hernández-Fernández\(^b\).

\(^a\) Servicio de Urología, Hospital General Universitario Gregorio Marañón, Madrid, Spain
\(^b\) Servicio de Protección Radiológica, Hospital General Universitario Gregorio Marañón, Madrid, Spain

\(^*\) Corresponding author.
E-mail addresses: adrhusillos@hotmail.com, maznyxc_1605@hotmail.com (A. Husillos).
20 November 2012 31 January 2013

Retroperitoneal laparoscopic cryotherapy in bilateral, synchronous kidney tumor\(^*\)

Crioterapia laparoscópica retroperitoneal en tumor renal sincrónico bilateral

Dear Editor:

Synchronous bilateral renal tumors that are not hereditary represent less than 4% of all renal tumors\(^1\) and their treatment represents a challenge for the urologist. So much so that there are few publications in this regard on the treatment of these tumors and their oncological outcomes.

We report the case of a 58-year-old male with Marfan syndrome, aortic valve prosthesis carrier, and ascending aorta graft since 1994, on anticoagulant therapy since then. He presented to us with hematuria. After objectifying by means of cystoscopy the presence of blood ejaculate through the left meatus and ruling out bladder tumor disease, an abdominal CT scan was performed which showed 2 peripheral renal tumors, measuring less than 3 cm, in the posterior convexity of both upper poles (Fig. 1A and B) and a left renal lithiasis.

Because of the patient comorbidity and bilaterality of the lesions, we decided to perform a minimally invasive treatment, in order to preserve the renal function and reduce
the possible complications. The patient underwent renal cryotherapy through retroperitoneal laparoscopic approach. First, the mass of the left side was treated, and after 3 weeks the contralateral side was addressed with the same surgical technique. Cryotherapy was performed with the Seednet\textsuperscript{TM} model (Galil Medical, UK Ltd.) with 17-G cryoprobes (Icerods\textsuperscript{TM}) by means of double-freeze cycles (Fig. 1C and D). Prior to the completion of the freezing, tumor biopsies were taken with Trucut\textsuperscript{TM} (18 G), the diagnosis being pathologic anatomy of type 1 renal papillary carcinoma on the left side and type 2 on the right side. The patient did not require intraoperative or postoperative transfusions. The mean operative time was 215 min and the mean hospital stay 5 days, without postsurgical complications and with satisfactory postoperative recovery at discharge.

Cryotherapy is an ablative, minimally invasive technique which shows good mid-term oncological results and which is proposed as an alternative to surgery in selected cases.\cite{1,2} It is indicated for peripheral renal tumors, well circumscribed, smaller than 4 cm, in elderly patients or with comorbidity, in solitary kidney ones, in renal failure, in multiple and/or bilateral tumors, and in transplanted kidney tumors.\cite{3} This treatment option provides improved renal function preservation.\cite{3} Both the retroperitoneal laparoscopic approach and the percutaneous one are indicated in injuries located on the dorsal renal side cancer and they have similar oncological results. Local recurrence with cryotherapy (or rather, treatment failure) is around 5%, appearing mostly in the first year, and they have a progression rate close to 1%.\cite{2}

Sporadic papillary renal carcinomas tend to multifocality. Furthermore, the incidence of multifocality is greater in patients with synchronous bilateral tumors than in those with unilateral disease, presenting also a greater risk of recurrence. This gives rise to hopes that we will perform a less and less radical treatment in this type of patients. So far, there are no studies that evaluate the oncological results of cryotherapy in patients with synchronous bilateral renal tumors. We can only rely on the published scientific evidence of the results obtained by partial surgery with renal preservation, which shows that the treatment of bilateral synchronous lesions have similar oncological results to unilateral tumors, showing a cancer-specific survival at 5 years of 79–86% and a disease-free survival of 87–91%.\cite{1}

This case shows that freeze-ablative treatment in bilateral synchronous tumors is a feasible and reproducible technique, with a low complication rate, although prospective studies are needed to analyze their oncological results.

References

LETTERS TO THE EDITOR

management, oncological and functional outcomes. BJU Int. 2007;100:26–9.


Departamento de Urología, Institut Català d’Urologia i Nefrologia, Barcelona, Spain

*Corresponding author. E-mail address: arturodom1980@hotmail.com (A. Domínguez).