Role of DaTSCAN and clinical diagnosis in Parkinson disease
Raúl de la Fuente-Fernández

Neurology 2012;78;696; Published online before print February 8, 2012;
DOI 10.1212/WNL.0b013e318248e520

This information is current as of September 19, 2012

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://www.neurology.org/content/78/10/696.full.html
Role of DaTSCAN and clinical diagnosis in Parkinson disease

Raúl de la Fuente-Fernández, MD

ABSTRACT

Objective: To assess the role of DaTSCAN in the diagnosis of Parkinson disease (PD).

Methods: Using the sensitivity and specificity values obtained in the 2 studies that recently led the US Food and Drug Administration to approve the use of DaTSCAN for the diagnosis of PD, calculations were carried out to estimate the accuracy of the clinical diagnosis taking DaTSCAN findings as the standard of truth.

Results: In early PD, a clinical diagnosis of “possible” or “probable” PD has a sensitivity of 98% and a specificity of 67%. The specificity increases to 94% once the clinical diagnosis becomes established. The overall accuracy of the clinical diagnosis is 84% in early PD and 98% at later stages. The clinical diagnostic accuracy is mathematically identical to the diagnostic accuracy of DaTSCAN imaging.

Conclusions: In the absence of neuropathologic validation, the overall accuracy of a clinical diagnosis of PD is very high and mathematically identical to the accuracy of DaTSCAN imaging, which calls into question the use of radiotracer neuroimaging as a diagnostic tool in clinical practice.

Neurology® 2012;78:696–701

GLOSSARY

CI = confidence interval; DAT = dopamine transporter; FDA = Food and Drug Administration; PD = Parkinson disease; SWEDD = scans without evidence of dopaminergic deficit.

Parkinson disease (PD) is characterized by the progressive loss of dopaminergic neurons in the substantia nigra pars compacta, leading to striatal dopamine depletion.1 As the clinical diagnosis of PD is not perfect,2,3 particularly in the early stages of the disease, an increasing number of clinicians are using radiotracer neuroimaging as a diagnostic tool. Dopamine transporter (DAT) SPECT, a less expensive and more widely available technique than PET, has already been incorporated into clinical practice in many European centers. Paradoxically, however, adequate neuropathologic validation of PD diagnosis based on DAT SPECT findings is still lacking.4,5

It should be noted that PD is a relatively common degenerative disorder that affects some 1%–2% of the general population.6 Hence, a large-scale use of DAT SPECT as a diagnostic tool in PD may potentially have substantial implications in terms of patients’ safety and management. According to a press release issued by General Electric Healthcare on April 13, 2011, DAT SPECT has already been used in nearly 300,000 patients in Europe.7 In the United States, where 50,000–60,000 new cases of PD are diagnosed each year,8 the Food and Drug Administration (FDA) has recently approved the use of DAT SPECT (DaTSCAN) for PD diagnosis.9

The objective of the present analysis was to examine the practical value of DaTSCAN imaging and clinical diagnosis in PD. Sensitivity, specificity, diagnostic accuracy, and predictive values were calculated under 2 different scenarios.

METHODS In January 2011, the US FDA approved the use of DaTSCAN for the diagnosis of PD.2 This decision was based on 2 multicenter, phase III studies. Chronologically, the first study (Study DP008–003)10 was designed to determine the sensitivity and specificity of DaTSCAN images in differentiating between patients with a established diagnosis of a parkinsonian syndrome (PD, multiple system atrophy, and progressive supranuclear palsy) and subjects without parkinsonism (patients with essential tremor and

Editorial, page 688

From the Section of Neurology, Hospital A. Marcide, Ferrol, Spain.

Disclosure: Author disclosures are provided at the end of the article.
healthy volunteers). Images were evaluated by on-site personnel and also by a blinded image evaluation panel consisting of 5 investigators. The primary endpoint was the blinded on-site visual assessment of DaTSCAN images as normal or abnormal. The standard of truth for judging the accuracy of the DaTSCAN image assessments was the expert clinical diagnosis of the patient made at baseline. Subjects with a parkinsonian syndrome were presumed positive for a striatal dopaminergic deficit, and subjects with essential tremor and healthy volunteers were presumed negative for a striatal dopaminergic deficit.

The second study (Study PDT304) — a prospective, longitudinal study — had the same purpose as Study DP008 – 003, but the study population consisted of patients with an early parkinsonian syndrome with or without tremor (“possible” and “probable” PD) vs a combination of patients with non-PD tremor (essential or dystonic tremor) and healthy volunteers. Clinical and DaTSCAN assessments were made at baseline, 18, and 36 months of follow-up. The primary endpoint was the baseline DaTSCAN image assessment by 3 independent blinded readers as normal or abnormal. The standard of truth was the clinical diagnosis established by 2 independent movement disorder specialists in consensus, based on the assessment of patients’ clinical examination videos at 36 months of follow-up. The standard of truth was used to judge whether or not a subject had a striatal dopaminergic deficit. Further methodologic details for the 2 studies can be found elsewhere.

As there is no proper neuropathologic validation of DaTSCAN PD diagnosis, calculations were performed under 2 hypothetical scenarios: 1) assuming that the standard of truth is the clinical diagnosis (i.e., following the original design of Study DP008 – 003 and Study PDT304); and 2) assuming that the standard of truth is the diagnosis derived from DaTSCAN findings. Sensitivity, specificity, diagnostic accuracy, and positive and negative predictive values, as well as the corresponding 95% confidence intervals (CI), were calculated following recommended methodology.

RESULTS Study DP008 – 003 was conducted between August 1997 and February 1998 in 6 European sites (2 in Germany, 2 in the United Kingdom, and 1 each in the Netherlands and Belgium), and included a total of 248 participants. The vast majority of patients with parkinsonism (82%) were diagnosed clinically as PD. Study PDT304, which included a total of 202 participants, was conducted between January 1999 and June 2005 in 10 European sites (4 in the United Kingdom, 2 in Spain, and 1 each in Austria, Belgium, Germany, and Portugal). In Study PDT304, patients with possible or probable parkinsonism were assumed to have PD, although a small proportion could have other degenerative parkinsonism. The figure shows a flow chart of the 2 studies. Demographics and clinical characteristics of participants in both studies, as well as a detailed account of adverse events and missing data management, are provided elsewhere.

As there is no proper neuropathologic validation of DaTSCAN PD diagnosis, calculations were performed under 2 hypothetical scenarios: 1) assuming that the standard of truth is the clinical diagnosis (i.e., following the original design of Study DP008 – 003 and Study PDT304); and 2) assuming that the standard of truth is the diagnosis derived from DaTSCAN findings. Sensitivity, specificity, diagnostic accuracy, and positive and negative predictive values, as well as the corresponding 95% confidence intervals (CI), were calculated following recommended methodology.

RESULTS Study DP008 – 003 was conducted between August 1997 and February 1998 in 6 European sites (2 in Germany, 2 in the United Kingdom, and 1 each in the Netherlands and Belgium), and included a total of 248 participants. The vast majority of patients with parkinsonism (82%) were diagnosed clinically as PD. Study PDT304, which included a total of 202 participants, was conducted between January 1999 and June 2005 in 10 European sites (4 in the United Kingdom, 2 in Spain, and 1 each in Austria, Belgium, Germany, and Portugal). In Study PDT304, patients with possible or probable parkinsonism were assumed to have PD, although a small proportion could have other degenerative parkinsonism. The figure shows a flow chart of the 2 studies. Demographics and clinical characteristics of participants in both studies, as well as a detailed account of adverse events and missing data management, are provided elsewhere.

As there is no proper neuropathologic validation of DaTSCAN PD diagnosis, calculations were performed under 2 hypothetical scenarios: 1) assuming that the standard of truth is the clinical diagnosis (i.e., following the original design of Study DP008 – 003 and Study PDT304); and 2) assuming that the standard of truth is the diagnosis derived from DaTSCAN findings. Sensitivity, specificity, diagnostic accuracy, and positive and negative predictive values, as well as the corresponding 95% confidence intervals (CI), were calculated following recommended methodology.

RESULTS Study DP008 – 003 was conducted between August 1997 and February 1998 in 6 European sites (2 in Germany, 2 in the United Kingdom, and 1 each in the Netherlands and Belgium), and included a total of 248 participants. The vast majority of patients with parkinsonism (82%) were diagnosed clinically as PD. Study PDT304, which included a total of 202 participants, was conducted between January 1999 and June 2005 in 10 European sites (4 in the United Kingdom, 2 in Spain, and 1 each in Austria, Belgium, Germany, and Portugal). In Study PDT304, patients with possible or probable parkinsonism were assumed to have PD, although a small proportion could have other degenerative parkinsonism. The figure shows a flow chart of the 2 studies. Demographics and clinical characteristics of participants in both studies, as well as a detailed account of adverse events and missing data management, are provided elsewhere.

As there is no proper neuropathologic validation of DaTSCAN PD diagnosis, calculations were performed under 2 hypothetical scenarios: 1) assuming that the standard of truth is the clinical diagnosis (i.e., following the original design of Study DP008 – 003 and Study PDT304); and 2) assuming that the standard of truth is the diagnosis derived from DaTSCAN findings. Sensitivity, specificity, diagnostic accuracy, and positive and negative predictive values, as well as the corresponding 95% confidence intervals (CI), were calculated following recommended methodology.

RESULTS Study DP008 – 003 was conducted between August 1997 and February 1998 in 6 European sites (2 in Germany, 2 in the United Kingdom, and 1 each in the Netherlands and Belgium), and included a total of 248 participants. The vast majority of patients with parkinsonism (82%) were diagnosed clinically as PD. Study PDT304, which included a total of 202 participants, was conducted between January 1999 and June 2005 in 10 European sites (4 in the United Kingdom, 2 in Spain, and 1 each in Austria, Belgium, Germany, and Portugal). In Study PDT304, patients with possible or probable parkinsonism were assumed to have PD, although a small proportion could have other degenerative parkinsonism. The figure shows a flow chart of the 2 studies. Demographics and clinical characteristics of participants in both studies, as well as a detailed account of adverse events and missing data management, are provided elsewhere.

As there is no proper neuropathologic validation of DaTSCAN PD diagnosis, calculations were performed under 2 hypothetical scenarios: 1) assuming that the standard of truth is the clinical diagnosis (i.e., following the original design of Study DP008 – 003 and Study PDT304); and 2) assuming that the standard of truth is the diagnosis derived from DaTSCAN findings. Sensitivity, specificity, diagnostic accuracy, and positive and negative predictive values, as well as the corresponding 95% confidence intervals (CI), were calculated following recommended methodology.

RESULTS Study DP008 – 003 was conducted between August 1997 and February 1998 in 6 European sites (2 in Germany, 2 in the United Kingdom, and 1 each in the Netherlands and Belgium), and included a total of 248 participants. The vast majority of patients with parkinsonism (82%) were diagnosed clinically as PD. Study PDT304, which included a total of 202 participants, was conducted between January 1999 and June 2005 in 10 European sites (4 in the United Kingdom, 2 in Spain, and 1 each in Austria, Belgium, Germany, and Portugal). In Study PDT304, patients with possible or probable parkinsonism were assumed to have PD, although a small proportion could have other degenerative parkinsonism. The figure shows a flow chart of the 2 studies. Demographics and clinical characteristics of participants in both studies, as well as a detailed account of adverse events and missing data management, are provided elsewhere.

As there is no proper neuropathologic validation of DaTSCAN PD diagnosis, calculations were performed under 2 hypothetical scenarios: 1) assuming that the standard of truth is the clinical diagnosis (i.e., following the original design of Study DP008 – 003 and Study PDT304); and 2) assuming that the standard of truth is the diagnosis derived from DaTSCAN findings. Sensitivity, specificity, diagnostic accuracy, and positive and negative predictive values, as well as the corresponding 95% confidence intervals (CI), were calculated following recommended methodology.

RESULTS Study DP008 – 003 was conducted between August 1997 and February 1998 in 6 European sites (2 in Germany, 2 in the United Kingdom, and 1 each in the Netherlands and Belgium), and included a total of 248 participants. The vast majority of patients with parkinsonism (82%) were diagnosed clinically as PD. Study PDT304, which included a total of 202 participants, was conducted between January 1999 and June 2005 in 10 European sites (4 in the United Kingdom, 2 in Spain, and 1 each in Austria, Belgium, Germany, and Portugal). In Study PDT304, patients with possible or probable parkinsonism were assumed to have PD, although a small proportion could have other degenerative parkinsonism. The figure shows a flow chart of the 2 studies. Demographics and clinical characteristics of participants in both studies, as well as a detailed account of adverse events and missing data management, are provided elsewhere.

As there is no proper neuropathologic validation of DaTSCAN PD diagnosis, calculations were performed under 2 hypothetical scenarios: 1) assuming that the standard of truth is the clinical diagnosis (i.e., following the original design of Study DP008 – 003 and Study PDT304); and 2) assuming that the standard of truth is the diagnosis derived from DaTSCAN findings. Sensitivity, specificity, diagnostic accuracy, and positive and negative predictive values, as well as the corresponding 95% confidence intervals (CI), were calculated following recommended methodology.
**Table 1** Study PDT304 (subjects with early symptoms)*

<table>
<thead>
<tr>
<th></th>
<th>Clinical diagnosis (+)</th>
<th>Clinical diagnosis (−)</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>DaTSCAN (+)</td>
<td>56</td>
<td>1</td>
<td>57</td>
</tr>
<tr>
<td>DaTSCAN (−)</td>
<td>15</td>
<td>30</td>
<td>45</td>
</tr>
<tr>
<td>Totals</td>
<td>71</td>
<td>31</td>
<td>102</td>
</tr>
</tbody>
</table>

Abbreviation: CI = confidence interval.

* Role of DaTSCAN in the diagnosis of Parkinson disease (parkinsonian syndrome) assuming that the clinical diagnosis is the standard of truth. Sensitivity = 56/71 = 0.79 (79%; 95% CI 68%, 87%); specificity = 30/31 = 0.97 (97%; 95% CI 84%, 99%); positive predictive value = 56/57 = 0.98 (98%; 95% CI 91%, 100%); negative predictive value = 30/45 = 0.67 (67%; 95% CI 52%, 79%); overall diagnostic accuracy = (56 + 30)/102 = 0.84 (84%; 95% CI 76%, 90%).

**Table 2** Study DP008-003 (subjects with established clinical diagnosis)*

<table>
<thead>
<tr>
<th></th>
<th>Clinical diagnosis (+)</th>
<th>Clinical diagnosis (−)</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>DaTSCAN (+)</td>
<td>154</td>
<td>4</td>
<td>158</td>
</tr>
<tr>
<td>DaTSCAN (−)</td>
<td>16</td>
<td>62</td>
<td>65</td>
</tr>
<tr>
<td>Totals</td>
<td>170</td>
<td>66</td>
<td>236</td>
</tr>
</tbody>
</table>

Abbreviation: CI = confidence interval.

* Role of DaTSCAN in the diagnosis of Parkinson disease (parkinsonian syndrome) assuming that the clinical diagnosis is the standard of truth. Sensitivity = 154/158 = 0.97 (97%; 95% CI 94%, 99%); specificity = 61/62 = 0.98 (98%; 95% CI 91%, 100%); positive predictive value = 154/155 = 0.99 (99%; 95% CI 98%, 100%); negative predictive value = 61/65 = 0.94 (94%; 95% CI 85%, 98%); overall diagnostic accuracy = (154 + 61)/220 = 0.98 (98%; 95% CI 95%, 99%).

**Table 3** Study PDT304 (subjects with early symptoms)*

<table>
<thead>
<tr>
<th></th>
<th>DaTSCAN (+)</th>
<th>DaTSCAN (−)</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical diagnosis (+)</td>
<td>56</td>
<td>15</td>
<td>71</td>
</tr>
<tr>
<td>Clinical diagnosis (−)</td>
<td>1</td>
<td>30</td>
<td>31</td>
</tr>
<tr>
<td>Totals</td>
<td>57</td>
<td>45</td>
<td>102</td>
</tr>
</tbody>
</table>

Abbreviation: CI = confidence interval.

* Role of clinical diagnosis in the diagnosis of Parkinson disease (parkinsonian syndrome) assuming that DaTSCAN is the standard of truth. Sensitivity = 56/57 = 0.98 (98%; 95% CI 91%, 100%); specificity = 30/45 = 0.67 (67%; 95% CI 52%, 79%); positive predictive value = 56/71 = 0.79 (79%; 95% CI 68%, 87%); negative predictive value = 30/31 = 0.97 (97%; 95% CI 84%, 99%); overall diagnostic accuracy = (56 + 30)/102 = 0.84 (84%; 95% CI 76%, 90%).

Under scenario 1 (clinical diagnosis as the standard of truth), DaTSCAN sensitivity and specificity values were 79% and 97% in Study PDT304, and 97% and 98% in Study DP008-003 (tables 1 and 2). The positive and negative predictive values were 98% and 67% in Study PDT304, and 99% and 94% in Study DP008-003.

Under scenario 2 (DaTSCAN as the standard of truth), Study PTD304 suggests that the clinical diagnosis in early PD has high sensitivity (98%) but relatively low specificity (67%) (table 3). In more advanced stages (Study DP008-003), the sensitivity remains virtually identical (99%) but the specificity increases substantially (94%) (table 4). The estimated positive predictive value of the clinical diagnosis was 79% in early PD (Study PTD304), and 97% once the clinical diagnosis becomes established (Study DP008-003). The estimated negative predictive value of the clinical diagnosis was very high in both cases (97% in Study PDT304 and 98% in Study DP008-003).

Study PTD304 likely reflects the most common situation in which clinicians may want to use DaTSCAN imaging as a diagnostic tool to confirm an early diagnosis of “possible” or “probable” PD. Taking DaTSCAN findings as the only guide to treatment management, Study PTD304 suggests that the use of DaTSCAN imaging could improve treatment management, saving unnecessary medications in 15% (15/102) of the cases and identifying 1% (1/102) of patients in need of specific treatment. Conversely, if the clinical diagnosis actually reflects the patient’s true condition, therapeutic strategies based on DaTSCAN findings would miss needed treatment in 15% (15/102) of patients with early PD and would unnecessarily treat 1% (1/102) of the cases.

As one can easily verify in the above results (see also tables 1–4), there are several mathematical identities that cannot be verified without further calculation.
tities: 1) the sensitivity and specificity under scenario 1 correspond to the positive and negative predictive values under scenario 2; 2) the positive and negative predictive values under scenario 1 correspond to the sensitivity and specificity under scenario 2; and, more importantly, 3) the overall diagnostic accuracy of DaTSCAN imaging under scenario 1 corresponds to the clinical diagnostic accuracy under scenario 2 (84% in early PD, and 98% at later disease stages).

DISCUSSION The comprehensive analyses presented here only intend to show that very similar sensitivity, specificity, and predictive values as those reported for DaTSCAN imaging in predicting striatal dopaminergic deficit can be obtained for the clinical diagnosis. Most importantly, this study emphasizes the need for proper neuropathologic validation. Until then, we are only evaluating (in a rather convoluted and expensive manner) the ability of DaTSCAN imaging to predict the clinical diagnosis or, conversely, the ability of the clinical diagnosis to predict DaTSCAN image findings. Naturally, the same arguments apply to other radiotracer neuroimaging techniques.

There is only one study (the Walker Study) that could potentially shed some light on the ability of DaTSCAN imaging to predict striatal dopaminergic deficit. It is a prospective clinicopathologic study designed to assess the accuracy of DaTSCAN imaging using the neuropathologic diagnosis at autopsy as the standard of truth. Currently, autopsy results are available from 27 subjects: 14 patients with dementia with Lewy bodies, 7 patients with PD, 7 patients with Alzheimer disease, 1 patient with corticobasal degeneration, and 1 healthy control subject. On this population, the sensitivity and specificity of DaTSCAN image assessments were 85% and 86%, respectively. While admittedly not totally comparable to the Walker Study, clinicopathologic observations in PD suggest that the sensitivity and specificity of a clinical diagnosis (as established at 2 years of symptom onset) can be as high as 91% and 98%, respectively; taking into account previous clinicopathologic studies, the most likely estimate of the overall clinical diagnostic accuracy is 90%.

With the data currently available, we can only speculate on hypothetical scenarios. The overall accuracy of the clinical diagnosis taking DaTSCAN as the standard of truth is mathematically identical to the overall diagnostic accuracy of DaTSCAN taking the clinical diagnosis as the standard of truth. The sensitivity, specificity, and predictive values obtained in the PDT304 and DP008–003 studies, which are similar to those found in other studies, suggest that the overall accuracy of a clinical diagnosis of PD is very high (84% in early PD; 98% once the clinical diagnosis becomes established). Hence, the information provided by DaTSCAN imaging is redundant in at least 84% of the cases. In other words, even assuming that DaTSCAN findings indeed reflect the patient’s true condition, the vast majority of scans would be unnecessary from a diagnostic standpoint. These estimates oblige to question the current tendency to use of DaTSCAN on a large-scale basis in clinical practice, raising also concerns in relation to patients’ safety and management. At least 250,000 of the 300,000 patients scanned in Europe since 2000 may have been unnecessarily exposed to iodine-123 gamma radiation. It is known that the risk of developing cancer from radiation exposure depends on several factors, including the radiation dose, the cumulative effective dose, and the age at exposure. Approximate cancer risk estimates can be obtained by comparing procedures with similar effective doses. Although the effective dose of DaTSCAN imaging is relatively low (3.94 mSv) and the target population is typically old, a potential increase in the risk of cancer remains a serious consideration when dealing with large populations. A recent study suggests that 1 in 5,000 patients who underwent a routine CT of the neck (4 mSv) at age 40 years will develop cancer from that CT scan; if the scan was done at age 60 years, the corresponding cancer risk estimate was 1 in 7,500. Some authors argue that a second DaTSCAN at 2-year follow-up could reduce diagnostic uncertainty in PD. Unfortunately, doubling the dose of radiation (∼8 mSv in 2 years) increases substantially the risk of cancer. It has been estimated that 1 in 1,500 patients who underwent a routine CT of the chest (8 mSv) at age 60 years will develop cancer from that CT scan. Naturally, neck and chest CT scans can lead to life-saving treatments and have therefore a very favorable risk to benefit ratio compared to DaTSCAN imaging for PD diagnosis.

The use of DaTSCAN in clinical practice also has implications in terms of patients’ management. Assuming that DaTSCAN findings reflect the patient’s true condition, it would be reasonable to argue that imaging results should guide therapy. This strategy could potentially save some 15% of early patients from receiving unnecessary medications (subjects with scans without evidence of dopaminergic deficit [SWEDDs]). Some (perhaps most) of these SWEDDs may indeed have a medical condition different from PD, the nature of which is not yet clear. However, if the patient’s true condition is best estimated by the clinical diagnosis, then the same 15% of early patients may miss a much needed treatment. For example, parkinsonian patients with dopa-responsive dystonia, who characteristically have normal DAT binding findings, greatly benefit from...
levodopa therapy.20,21 Preliminary data suggest that DaTSCAN imaging leads to more changes in diagnosis and management, increasing also clinicians’ confidence in the diagnosis.22 Still, this does not seem to result in better quality of life for the patient.22

In terms of differential diagnoses, DaTSCAN imaging cannot reliably distinguish between PD and other degenerative parkinsonisms, such as multiple system atrophy or progressive supranuclear palsy, whenever evaluated on a case-by-case basis. This important point is specifically recognized in the FDA briefing document.5 The analyses presented here suggest that a distinction between PD and non-PD tremor is not always straightforward, and the same applies to PD vs vascular parkinsonism, especially in the elderly.13 One could reasonably argue that DaTSCAN imaging should be most helpful to confirm a clinical diagnosis of psychogenic or drug-induced parkinsonism. However, contrary to what one would expect, several studies have encountered abnormal DaTSCAN findings in a surprisingly high number of patients clinically diagnosed as having psychogenic23 or drug-induced parkinsonism.24 It remains unknown whether these imaging changes are functional or structural in nature. Psychologically or drug-induced downregulation of DAT expression is certainly a possibility. In support of this notion, DaTSCAN abnormalities in subjects with schizophrenia treated with neuroleptics are unrelated to neuroleptic-induced parkinsonism.25 In other words, DaTSCAN imaging does not predict whether a given neuroleptic-treated patient will develop parkinsonism or not. Despite all these limitations, functional neuroimaging might be helpful in carefully selected cases, particularly in patients without a clear clinical diagnosis in which an invasive procedure (e.g., deep brain stimulation) is contemplated as a treatment option. Nonetheless, in clinical practice, the reliability of DaTSCAN imaging is far from optimal. A 2-year longitudinal study found discrepancies between the first and second readings in nearly 50% of the cases with repeated DaTSCAN.14 Inexplicably, these discordant results were mostly due to cases with abnormal images in the first scan and normal images in the second scan, performed 2 years later.14

Neuropathologic studies are definitely needed to assess the diagnostic accuracy of radiotracer neuroimaging compared to the clinical diagnosis. Until these assessments are available, it may be premature to embark on a large-scale use of DaTSCAN imaging for the diagnosis of PD.

REFERENCES

17. Smith-Bindman R, Lipson J, Marcus R, et al. Radiation dose associated with common computed tomography ex-


---

**Neurology® Launches Subspecialty Alerts by E-mail!**

Customize your online journal experience by signing up for e-mail alerts related to your subspecialty or area of interest. Access this free service by visiting [http://www.neurology.org/site/subscriptions/etoc.xhtml](http://www.neurology.org/site/subscriptions/etoc.xhtml) or click on the “E-mail Alerts” link on the home page. An extensive list of subspecialties, methods, and study design choices will be available for you to choose from—allowing you priority alerts to cutting-edge research in your field!

---

**AAN Publishes Statement to Guide Neurologists on Abused Patients**

The AAN recently published “Position Statement on Abuse and Violence” which will aid neurologists in screening patients for different types of abusive treatment from family or caretakers. The statement was published in *Neurology®* online ahead of print on January 25, 2012, and in the February 7, 2012, print issue of *Neurology.*

**Academy Seeks Ambassadors to Address Domestic Violence**

The AAN is offering free training to members who wish to be ambassadors to help address domestic violence issues in their communities and educate their colleagues at state neurology society meetings. The training session will be held at the Annual Meeting in New Orleans on Monday, April 23, from 10:00 a.m. to 12:00 p.m. Contact Amy Wallace at awallace@aan.com or (651) 695-2817 for more information or to register.
Role of DaTSCAN and clinical diagnosis in Parkinson disease
Raúl de la Fuente-Fernández
Neurology 2012;78;696; Published online before print February 8, 2012; DOI 10.1212/WNL.0b013e318248e520

This information is current as of September 19, 2012