The visual prostate symptom score is a simple tool to identify and follow up in general practice patients with lower urinary tract symptoms associated with benign prostatic hyperplasia (a study with 1359 patients)

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Summary

Introduction > The IPSS (International Prostate Symptom Score), a structured self-administered questionnaire is the reference test for evaluation of lower urinary tract symptoms (LUTS). A 5-pictogram score entitled Score Visuel Prostatique en Images (SVPI) was proposed in France and evaluated by urologists. We assessed the interest of the SVPI for the identification and monitoring of benign prostatic hyperplasia (BPH)-related LUTS in general practice, and compared it with the IPSS.

Methods > A prospective observational survey was carried out with general practitioners (GPs) throughout France. The first 4 consecutive patients aged over 60 years, with BPH-related LUTS (IPSS score greater than 8) for whom the GP freely intended to prescribe an alpha-blocker, were enrolled. Two self-administered questionnaires were used at baseline and at follow-up visit

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(between 1 and 3 months): French language version of the IPSS (8 questions) and the SVPI. The 5 pictograms of the SVPI were: How many times do you urinate during the day (score of 0 to 5)? How many times do you urinate during the night (score of 0 to 5)? Do you experience an urgent need to urinate (score of 0 to 4)? How strong is the stream (response from 0 to 4)? Do you urinate in a satisfactory manner (score of 0 to 6)? The primary objective was to assess and validate the sensitivity to change of the SVPI at baseline and follow-up visit by the study of the correlation of its changes according to the changes of LUTS evaluated with the IPSS.

**Results** > Five hundred and forty seven GPs enrolled at least one patient and returned information. 2261 patients completed the inclusion questionnaire, and 1359 were included in the statistical analysis. Under treatment with alpha-blocker, the IPSS average decreased from 17.7 ± 4.9 to 10.5 ± 4.4 (P < 0.0001) with an average diminution of 7.2 ± 4.0, which corresponded to an improvement of 40.7%. This significant decrease of the IPSS involved all its components. The total SVPI was evaluated to 13.8 ± 3.1, the irritative sub-score to 7.4 ± 2.0, and the obstructive sub-score to 2.4 ± 0.8. The internal consistency of the SVPI was good with a value of the Cronbach Alpha coefficient of 0.74. Under treatment with alpha-blocker, the value of the total SVPI decreased from 13.8 ± 3.1 to 8.2 ± 3.0 (P < 0.0001) between enrolment and the follow-up visit. The Pearson coefficients assessing the correlations in 1359 patients with benign prostatic hypertrophy were statistically significant at enrolment, and at the follow-up visit. Their variations were all significant. The correlations were weak for the obstructive subscores. Four hundred and fifty-one GPs gave their opinion on the SVPI compared to IPSS: for 36.8% of them, the SVPI was completed a little more rapidly than the IPSS, for 34.6% more rapidly, and for 22.8% of them the SVPI was completed much more rapidly. For 5.8% of them, there was no difference. With regard to ease of understanding for the patient, the 451 GPs responded: much easier for 27.3%, easier for 37.3%, a little easier for 27.1%, and 8.4% had no opinion.

**Conclusion** > This study showed the SVPI to be a simple and useful tool for identifying and monitoring BPH-related LUTS. Total SVPI was correlated with total IPSS, even if the obstructive subscore correlation was weaker. The good sensitivity of the SVPI to change showed its potential interest for monitoring LUTS. Given the underuse of the IPSS and the interest expressed by GPs and urologists, the SVPI might be used alone to analyze patient complaints.

**Résumé**

**Introduction** > L’International Prostate Symptom Score (IPSS), un questionnaire structuré auto-administré, est le test de référence pour évaluer les symptômes du bas appareil urinaire (SBAU). Un score avec 5 pictogrammes, le Score Visuel Prostatique en Images (SVPI), a été proposé en France et évalué par des urologues. Nous avons évalué l’intérêt du SVPI pour identifier et suivre les SBAU liés à l’hyperplasie bénigne de la prostate (HBP) en médecine générale, et l’avons comparé à l’IPSS.

**Méthodes** > Une étude observationnelle prospective a été faite avec des médecins généralistes (MG) de toute la France. Les 4 premiers patients consécutifs de plus de 60 ans, ayant des SBAU liés à une HBP (score IPSS de plus de 8), et pour lesquels les MGs avaient l’intention de prescrire un alpha-bloquant, ont été inclus. Deux questionnaires auto-administrés ont été utilisés lors de l’inclusion et de la visite de suivi (entre 1 et 3 mois): la version française de l’IPSS (8 questions) et le SVPI. Les 5 pictogrammes du SVPI étaient : Combien de fois urinez-vous le jour (score de 0 à 5) ? Combien de fois urinez-vous la nuit (score de 0 à 5) ? Avez-vous des envies pressantes (score de 0 à 4) ? Quelle est la force du jet (réponse de 0 à 4) ? Urinez-vous de façon satisfaisante (score de 0 à 6) ? Le critère principal était d’évaluer la validité et la sensibilité au changement du SVPI lors de l’inclusion et de la visite de suivi par la corrélation des changements des SBAU évalués avec l’IPSS.

**Résultats** > Cinq cent quarante-sept MGs ont inclus au moins un patient; 2261 patients ont rempli le questionnaire d’inclusion, et 1359 ont été inclus dans l’analyse statistique. Avec un alpha-bloquant, le score IPSS moyen a diminué de 17,7 ± 4,9 à 10,5 ± 4,4 (p < 0,0001) avec une diminution moyenne de 7,2 ± 4,0 (amélioration de 40,7 %). La diminution statistiquement significative de l’IPASS a concerné tous ses composants. Le score total SVPI était de 13,8
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Introduction
The Male Voiding Disorders Committee of AFU (French Urological Association) has recommended the use of symptom scores to evaluate the intensity of symptoms, inconvenience and quality of life at initial assessment and subsequent monitoring of benign prostatic hyperplasia (BPH) [1]. The IPSS (International Prostate Symptom Score), a structured self-administered questionnaire validated in French, is a reference test for evaluation of lower urinary tract symptoms (LUTS) [2,3]. It should be completed before the consultation. Its use can be impeded by poor comprehension on the patient’s part [4,5]. However, in routine practice, this score is little used by general practitioners (GPs), and urologists.

What was known?
• The IPSS, an eight questions score to assess BPH-related LUTS is poorly used by GPs.
• A visual score (4 pictograms) had been used by urologists in few foreign settings.
• A French adapted visual score with 5 pictograms (SVPI for Score Visuel Prostatique en Images) was adapted by the AFU (Association Francaise d’Urologie) and tested with urologists.

What this study adds?
• The good sensitivity of the SVPI to change, its usefulness in the detection of clinical improvement showed its potential interest for monitoring LUTS by GPs.
• The SVPI is a simple and useful tool for identifying and monitoring BPH-related LUTS in general practice.

Visual analogue scales (VAS) to evaluate BPH-related LUTS have been proposed and tested in 65 patients attending urologists [6]. The VAS has been tested in general practice. Correlations obtained at enrolment between VAS and IPSS scores, for a large population, did not allow validation of the use of this VAS as a substitute for the IPSS questionnaire [7]. A score known as the Visual Prostate Symptom Score (VPSS) was proposed by Van der Walt et al. in South Africa [8]. The idea was to have a visual score so that patients with little or no formal education could respond. This score was used in South Africa, Turkey, Korea, and the United States, but was not translated into or validated in the French language. Based on the VPSS, a 5-pictogram score entitled Score Visuel Prostatique en Images (SVPI) was proposed in France. Two studies were set up in France to assess the SVPI: one with GPs, and one with urologists. Its use and acceptance by patients and urologists had been evaluated and published in 2017 [9]. This study conducted by 169 urologists with 550 patients has shown that correlations between the IPSS and SVPI at enrolment and the follow-up visit, and their variation were all significant. Total SVPI was significantly correlated with total IPSS, as were the irritative, obstructive and quality of life subscores evaluated on the corresponding pictograms [9]. The French SVPI could be useful in general practice to evaluate LUTS. This SVPI score has not been evaluated with GPs. Our objective was to assess the interest of the SVPI for the identification and monitoring of BPH-related LUTS in general practice, and to compare it with the IPSS.

Methods
A prospective observational survey was carried out between 1 October 2011 and 10 September 2013 in general practices with the help of general practitioners (GPs) throughout France,
under the aegis of the French Urological Association (AFU). A protocol was designed by the authors.

**Selection of GPs**

The objective was to enrol 4,094 patients with 1,024 GPs (4 patients per GP). Names were randomly drawn from the list of all French GPs located throughout France. The sample was adjusted on the medical density of GPs in the French regions. Based on an estimated acceptance rate of 40%, a sample of 2560 GPs was selected. GPs were contacted by the Cenbiotech company (Parc Mazen-Sully, 21000 Dijon), responsible for monitoring the study.

**Patient selection**

The first 4 consecutive patients aged over 60 years, with BPH-related LUTS (IPSS score greater than 8) for whom the GP freely intended to prescribe an alpha-blocker, were enrolled. The prescription was either a primary treatment, or a switch from a previous monotherapy, or an association with a previous treatment. The GP completed a questionnaire at baseline and at follow-up visit (between 1 and 3 months). In order to fulfill the observational criteria, the no-inclusion criteria were restricted to failing to meet the inclusion criteria or refusing to participate.

**Prostate scores**

Two self-administered questionnaires were used: French language version of the IPSS (8 questions) and the score visuel prostatique en images (SVPI) with 5 pictograms. The IPSS 7 questions could be answered on a scale of 0 to 5 [3]. A total score was calculated: 0 to 7 characterised a mild disorder, 8 to 19 a moderate disorder, and 20 to 35 a severe disorder. The 8th question was concerned with quality of life (on a scale of 0 to 6). The storage sub score comprised questions 2, 4 and 7; the voiding sub score comprised questions 1, 3, 5 and 6. The Score Visuel Prostatique en Images (SVPI) was used. The SVPI is the French validated translation of the VPSS that has 4 pictograms [9]. A pictogram on urgency was added in the French version compared to the original VPSS, and the gradation of the pictogram on the force of the stream was modified (4, 3, 2, 1, 0 from weakest to strongest for the VPSS, versus 5, 4, 3, 2, 1 for the IPSS). The colour visual was made up of 5 pictograms. Each pictogram was assigned a score not mentioned on the visual. The 5 pictograms were: How many times do you urinate during the day (score of 0 to 5)? How many times do you urinate during the night (score of 0 to 5)? Do you experience an urgent need to urinate (score of 0 to 4)? How strong is the stream (response from 0 to 4)? Do you urinate in a satisfactory manner (score of 0 to 6)? (figure 1). Calculation of the total score gave a value from 0 to 24. The SVPI storage sub score comprised questions 1, 2 and 3; the SVPI voiding sub score corresponded to question 4. The impact of global urinary discomfort on social life was evaluated on different visual analogic scales (social life, professional life, transport, leisure, emotional life, other activity) varying from 0 mm: "no one" to 100 mm: "very strong".

**Protocol**

At the first visit and follow-up visit (1-3 months after the first visit), the patient completed 2 questionnaires: the French language version of the IPSS and the SVPI. At the follow-up visit, the patient was asked to give an overall assessment of the treatment (substantially, much or slightly improved, no change, slightly, much or substantially worsened). The GPs completed a questionnaire for each patient with sociodemographic data, the seniority of LUTS, treatments already undergone, and evaluation of disorders. The GPs described the treatment prescribed at the end of the visit. The GPs had to give their opinion on the SVPI compared with the IPSS for rapidity of use, ease of comprehension by the patient and their likelihood of using the SVPI in the future.

**Judgement criteria**

The primary objective was to assess and validate the sensitivity to change of the SVPI at baseline and follow-up visit by the study of the correlation of its changes according to the changes of LUTS evaluated with the IPSS, the changes in the social discomfort caused by the LUTS associated with BPH, and the level of satisfaction of patients with the treatment evaluated by the PG1 (Patient Global Improvement Impression) score. The secondary objectives were to describe the SVPI adequacy to the daily practice of GPs, and the opinion of patients and their understanding of the drawing were also described.

**Statistical methods**

Sociodemographic and clinical characteristics were expressed as mean, standard deviation, median [extremes] for quantitative variables, and as size and percentage for qualitative variables. Comparison employed analyses of variance for quantitative variables, and chi-square tests for qualitative variables. The Cronbach Alpha coefficient was used for the internal consistency. Correlation analyses were performed using Pearson’s coefficient. Data were collected, checked by CenBioTech, and analysed using the SAS software package, version 9.1.2.

**Protocol registration and ethical aspects**

In accordance with the methodology of the survey, French legislation and the European directive, the protocol was not submitted to an ethical committee. The protocol was sent to the French National Council of the Order of Physicians with the financial agreements offered to the investigators. Patients were informed orally by the GPs, and advised that every measure had been taken to respect the anonymity of data.

**Results**

Of the 722 GPs who agreed to participate into the study, 768 enrolled at least one patients, and 547 enrolled at least one patient and returned information (list of GPs in appendix). The mean age of the 547 GPs was 55.2 ± 7.0 years [95% CI 54.5-55.8], and 92.3% were men. They were located all over
France, either in rural or urban areas, and had been practicing for 28.8 ± 7.8 years; 57.8% practiced in community health centers. Two thousand two hundred and twenty six patients completed the inclusion questionnaire, and 1359 were included in the statistical analysis. Out of the 2261 patients, 12 were not included because their follow-up questionnaire was missing. Out of the 2249 included patients with an inclusion and a follow-up questionnaires, 890 were excluded for multiple reasons (13 because their inclusion date was not completed; 56 because their follow-up date was not completed; 347 had less than 60 years or their age was missing; 79 had no alpha-blocker prescription at baseline; 370 did not fulfil the visual score at baseline and 405 at follow-up; 11 did not fulfil the IPSS score at baseline and 15 at follow-up; 142 did not have an IPSS greater than 8 at inclusion. The 1359 patients had a mean age of 69.1 ± 6.4 years [95% CI 68.7–69.4], they had had BPH-related LUTS for 3.6 ± 3.4 years [95% CI 3.4–3.8]. Their IPSS was mostly rated as “moderate” (65.9%) or “severe” (34.1%) and never as

Figure 1
The 5 pictograms of the SVPI (Score Visuel Prostatique en Images)
"mild". The IPSS average score was 17.7 ± 4.9, the average values of the storage sub-score was 7.5 ± 2.2, the average value of the voiding sub-core was and 10.2 ± 3.4. According to question Q8 of the IPSS questionnaire, 87.1% of the patients were “mostly unsatisfied” (42.8%) or “really unsatisfied” (44.3%) with their quality of life as affected by urinary symptoms.

The average impact global urinary discomfort on social life (from 0 "no one" to 100 "very strong") was 48.6 mm ± 28.0 on professional life, was 61.3 mm ± 20.8 on transport (car, public transport), 59.8 mm ± 21.8 on leisure, 50.4 mm ± 25.1 on emotional life and 50.6 mm ± 26.0 on other activity.

More than two thirds of the patients (n = 939; 69.1%) were already under treatment for an average duration of 27 ± 25 months: 71.4% with plant extracts, 20.6% with alpha-blockers and 15.1% with 5-alpha reductase inhibitors (associations explain that total is above 100%).

Their treatment had initially been prescribed by the general practitioner himself (70.8%), another general practitioner (16.8%) or an urologist (12.3%). The main reason to change the treatment was lack of efficacy (89.4%) followed by tolerability (5.9%). The GP prescribed the alpha-blocker alone as the first line treatment in 30.6% of the patients and substituted and/or associated to a previous treatment in 69.4%. When the alpha-blocker was associated with another treatment (29.9%, n = 406), it was essentially with plant extracts (74.9%) and 5-alpha reductase inhibitors (22.4%).

### Change of IPSS

Under treatment with alpha-blocker, the IPSS average decreased from 17.7 ± 4.9 to 10.5 ± 4.4 (P < 0.0001) with an average diminution of 7.2 ± 4.0 which corresponded to an improvement of 40.7% (table I). This significant decrease of the IPSS involved all its components (table I). The percentage of patients having severe symptoms (20–35) decreased from 34.1% to 3.1%, having moderate symptoms (8–19) increased from 65.9% to 70.3%, while the percentage of patients having mild symptoms (0–7) increased from 0% to 26.6% (< 0.0001). Quality of life (Q8 of the IPSS) improved significantly with an increased percentage of patients who were satisfied with their lives from 2.4% to 55.6% while the percentage of unsatisfied patients decreased from 87.6% to 18.2% (P < 0.0001).

### Change of SVPI

The total SVPI was evaluated to 13.8 ± 3.1, the irritative sub-score to 7.4 ± 2.0, and the obstructive sub-score to 2.4 ± 0.8 (table I). The internal consistency of the SVPI was good with a value of the Cronbach Alpha coefficient of 0.74. Under treatment with alpha-blocker, the value of the total SVPI decreased from 13.8 ± 3.1 to 8.2 ± 3.0 (P < 0.0001) between enrolment and the follow-up visit 1-3 months later (table I). The sub-scores decreased (table I). The percentage of patients who were satisfied of their quality of life in relation with their LUTS (Q5) increased from 5.5% to 61.1% (P < 0.0001). According to these results, the SVPI had a good sensitivity to change.

### Correlations between SVPI and IPSS

The Pearson coefficients (table II) assessing the correlations in 1359 patients with benign prostatic hypertrophy were statistically significant at enrolment, and at the follow-up visit. Their variations were all significant. The correlations were weak for the obstructive subscores (table II).

### GPs and patients' opinions of the visual score

Four hundred and fifty-one GPs gave their opinion on the SVPI compared to IPSS: for 36.8% of them, the SVPI was completed a little more rapidly than the IPSS, for 34.6% more rapidly, and for 22.8% of them the SVPI was completed much more rapidly. For 5.8% of them, there was no difference. With regard to ease of understanding for the patient, the 451 GPs responded: much easier for 27.3%, easier for 37.3%, a little easier for 27.1%, and 8.4% had no opinion. The SVPI was very well regarded by patients (27.4%), well regarded (35.2%) and fairly well regarded (36.1%). Most (92.9%) of the 377 GPs who responded hoped to continue using the SVPI: 34.7% instead of the IPSS, and 37.7% in addition to the IPSS.

### Discussion

This study showed the SVPI to be a simple and useful tool for identifying and monitoring BPH-related LUTS. Total SVPI was
correlated with total IPSS, even if the obstructive subscore correlation was weaker. The good sensitivity of the SVPI to change showed its potential interest for monitoring LUTS.

**Interest of the visual prostate symptom score**

The VPSS (4 pictograms in English-language publications) has already been tested in 96 men with a mean age of 64 years and with low educational attainment. The VPSS was completed without assistance by 82% of men, compared with 53% for the IPSS. Correlation with the IPSS was evaluated as satisfactory [10]. Of these 96 men, 93 had an assessment of urinary flow rate. VPSS was equivalent to IPSS, and correlated well with Qmax and Qave urinary flow rates [10]. The VPSS was compared with the IPSS in 100 men with a mean age of 48.8 years in South Africa [11]. They had urethral stenosis. The mean time to complete the VPSS was 118 seconds at the first visit, compared with 215 seconds for the IPSS; this mean time was 80 seconds at follow-up visits compared with 156 seconds for the IPSS. Correlation was satisfactory between VPSS and IPSS, maximum urinary flow rate, and urethral diameter [11]. The VPSS was also compared with the IPSS in 240 Korean patients with a median age of 59.0 years, with a median prostate volume of 28 mL (transrectal ultrasound). Good correlation was observed between VPSS and IPSS for total scores, obstructive and irritative symptoms, and quality of life [12]. The VPSS was compared with the IPSS in 191 Turkish patients with a mean age of 62.8 years, and with very low educational attainment. Satisfactory correlation was observed [13]. These scores were compared in the United States (San Francisco, California) in 121 patients with a mean age of 54 years. Apart from good correlation between the scores, the VPSS proved useful for patients with a low level of education. To complete the visual, the VPSS needed less assistance than the IPSS [14]. We confirmed the observations of our foreign colleagues, and showed that the pictures probably had transcultural messages. There is no need for translation into French (pictograms) other than for the short questions (5-7 words). This is an advantage compared with the IPSS, which needs careful reading of longer questions (18-35 words), and reflection in order to tick the boxes corresponding to frequencies. While the IPSS has the appearance of an interrogation, the SVPI is a more approachable and entertaining way of bringing problems to light.

**Comparison with the SVPI use by urologists**

This study showed weaker correlations when SVPI was used by GPs, compared to the observed correlations by urologists [9]. For the obstructive subscore, the information from the SVPI score is different from the IPSS: 4 questions of the IPSS score have been condensed in one SVPI pictogram. The symptoms linked to the irritative phase are more troublesome for patients [15]. It’s probably important to allow more strength to these symptoms (3 visuals versus one).

**Strengths and limitations of the study**

Among 2261 patients initially included in the study, only 1359 were included in the analysis. The first reason for exclusion was errors in inclusion criteria, which might be explained by the high number of investigators in the study (722 GPs). The rate of lost of follow-up was around 20% (estimated by the number of patients not completing the final visual score, n = 405), which is in accordance with such observational surveys. The study involved a large number of patients observed simultaneously within a 2 years period. The GPs came from all regions of France, and monitoring was followed by a service company that verified the data, and analysed them according to pharmaceutical-type procedures. The patient diary was simple and well accepted, with easy to understand pictograms. Given the underuse of the IPSS and the interest expressed by GPs and urologists, the SVPI might be used alone to analyse patient complaints. There is little or no use of the IPSS by general practitioners. Because it is so easy to use, and because it correlates well with the total IPSS score, the SVPI could be used in general practice to facilitate more rigorous evaluation and monitoring of LUTS.

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References

Supplementary data
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