SEMINAL, CLINICAL AND COLOR-DOPPLER ULTRASOUND CORRELATES OF PROSTATITIS-LIKE SYMPTOMS IN MALES OF INFERTILE COUPLES

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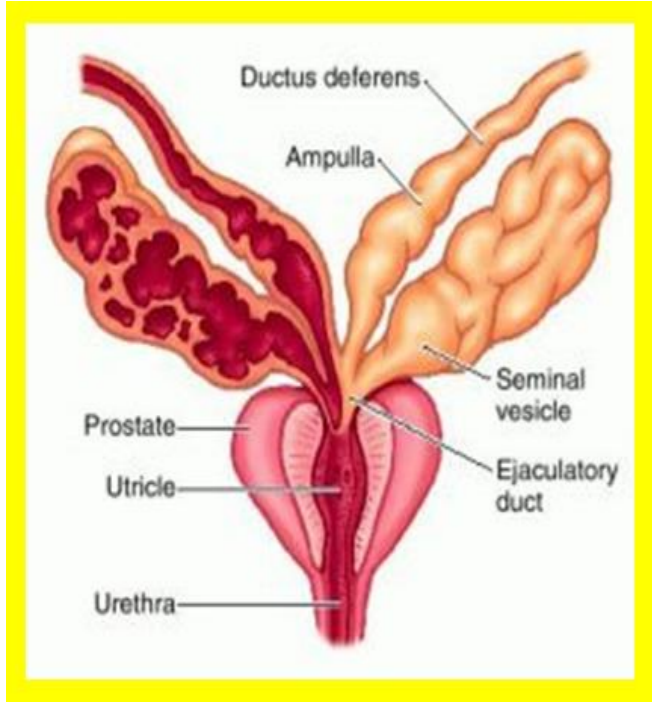
Introduction: Prostatitis-like symptoms (PLS) are common, often vague and not specific symptoms which may originate from the prostate or from other pelvic or scrotal organs.
-The National Institutes of Health-Chronic Prostatitis Symptom Index (NIH-CPSI) is nowadays considered the gold-standard instrument to assess PLS severity.
-So far, imaging of the prostate-vesicular region has been considered an "optional", poorly useful, tool in evaluating PLS.
-Although several studies previously investigated the impact of prostatitis, vesiculitis or epididymitis on semen parameters, the correlations between their related symptoms and scrotal/transrectal ultrasound characteristics have been poorly studied.
-No previous study systematically evaluated ultrasound correlates of PLS in men with couple infertility.

Aim: To investigate possible correlations between the NIH-CPSI total score and scrotal/transrectal colour-Doppler ultrasound (CDU) features and to evaluate the differences between subjects with and without PLS in a cohort of men with couple infertility.

Methods: PLS of 400 men (35.8±7.2 years) with couple infertility were assessed by the NIH-CPSI.
Prostatitis-like symptoms were defined by the presence of perineal and/or ejaculatory pain or discomfort and an NIH-CPSI pain score ≥ 4, according to Nickel's criteria (Nickel et al., J Urol, 2001;165:842-5).
Symptoms were classified as "mild" or "moderate to severe" for an index pain score of 4 to 7 or ≥ 8, respectively.
All patients underwent, during the same day, seminal analysis, including interleukin 8 (sIL-8), a reliable surrogate marker of prostatitis, and urine and seminal cultures, along with scrotal and transrectal CDU, before and after ejaculation.
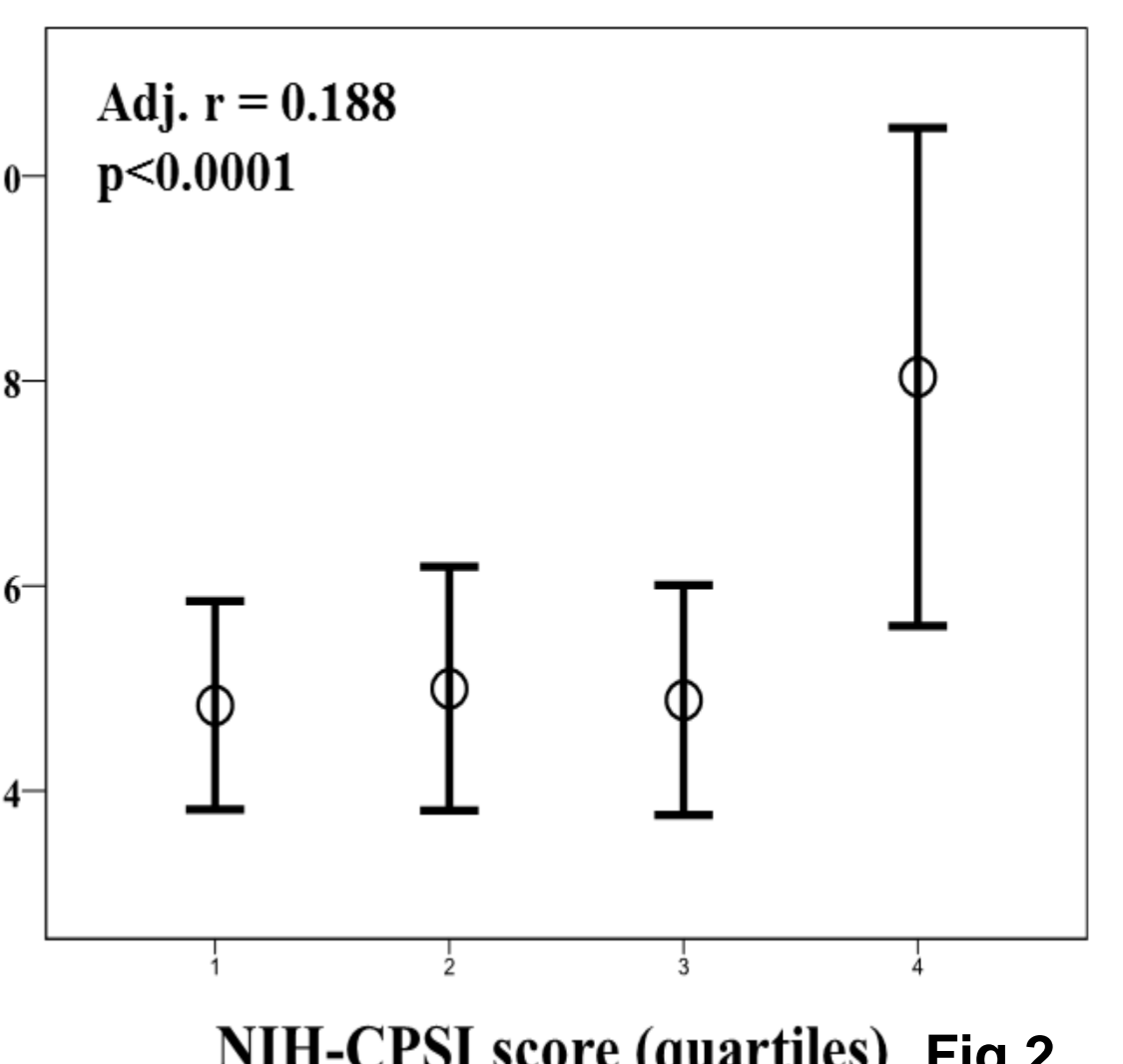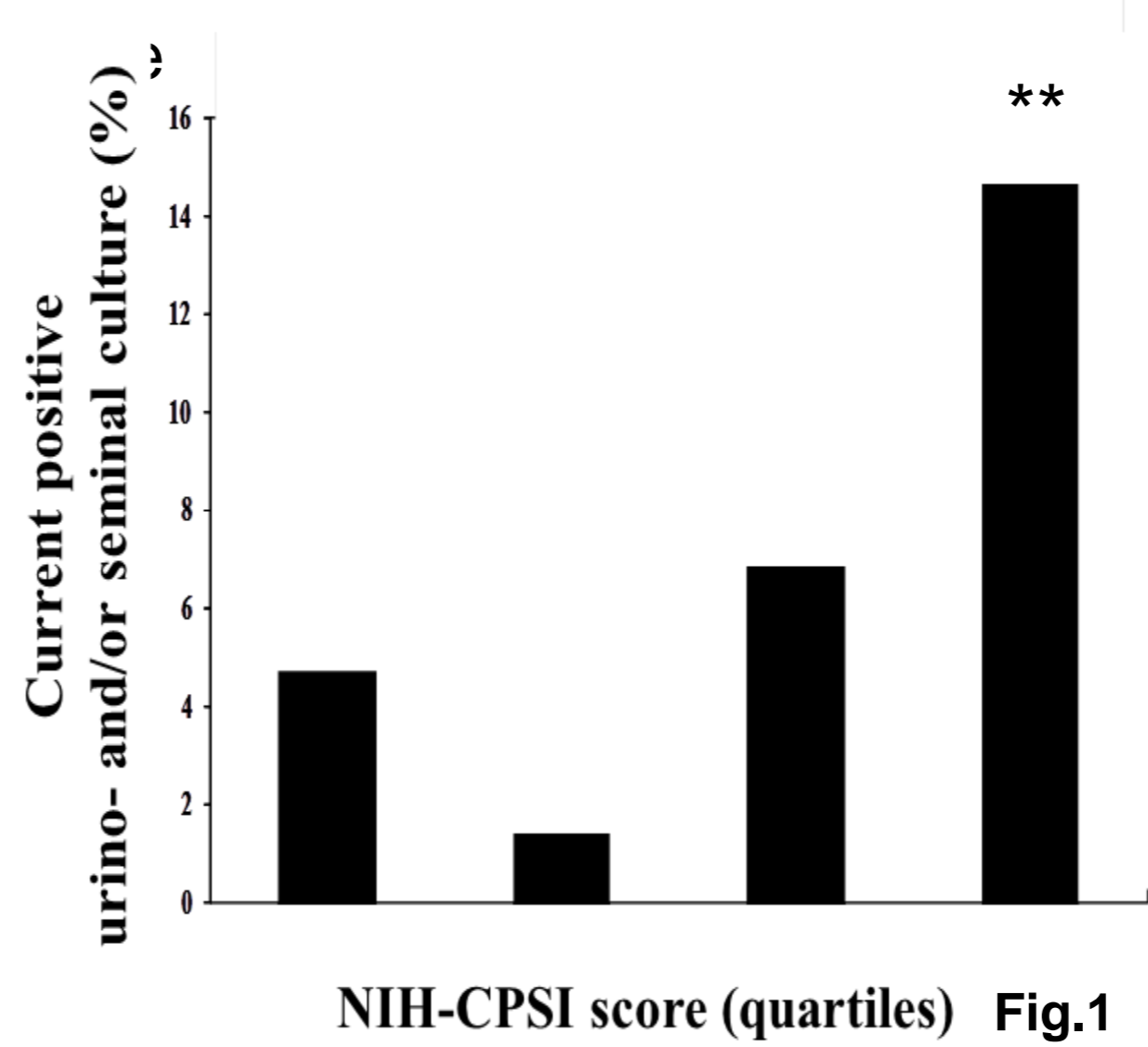
Results PLS were detected in 39 (9.8%) subjects, 17 (4.3 %) with "mild" and 22 (5.5 %) with "moderate to severe" symptoms.

- **No prostatitis-like symptoms, 90.2% (n=361)**
- **Prostatitis-like symptoms, 9.8% (n=39)**
- «mild» symptoms, 43.6% (n=17)
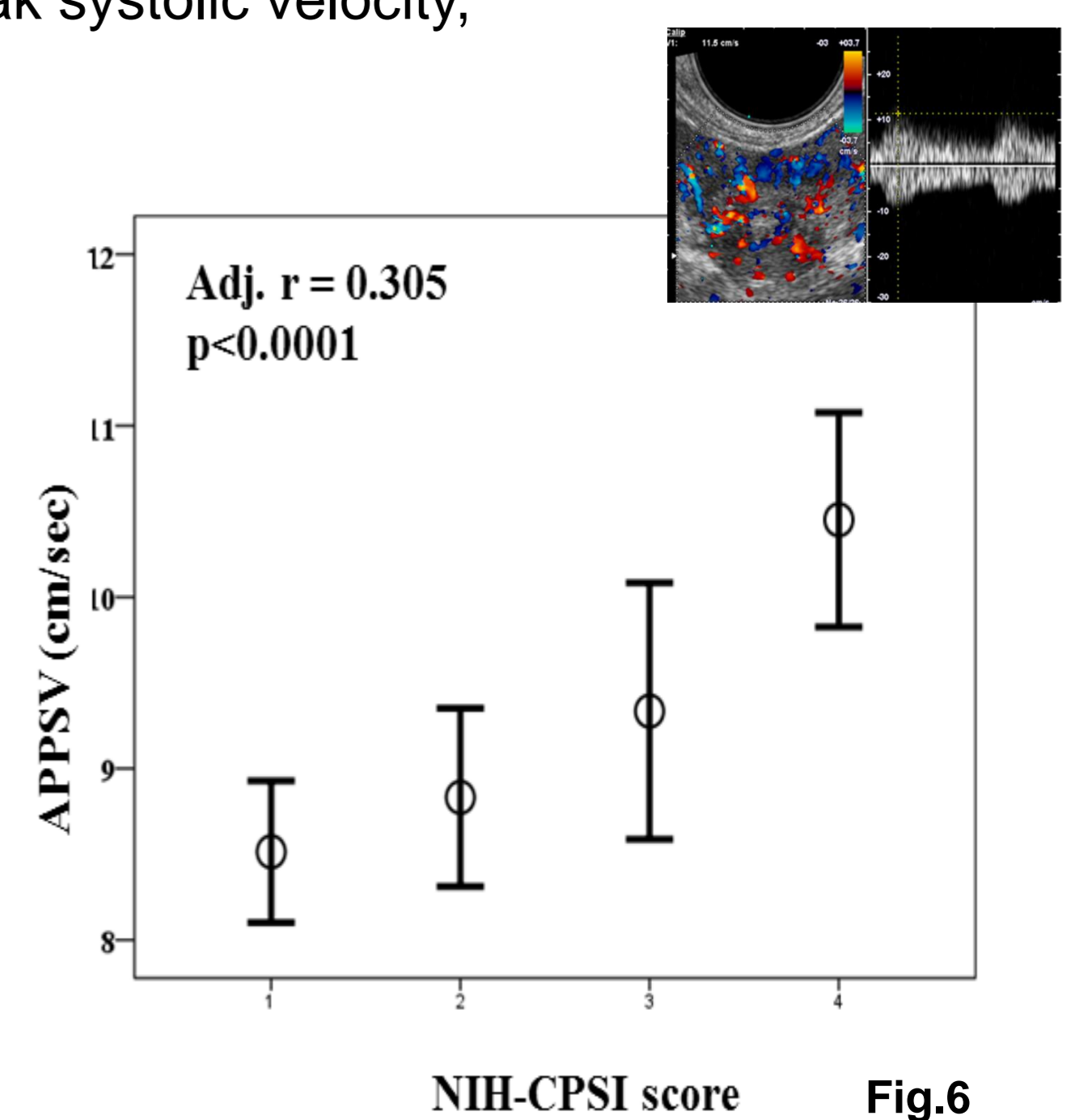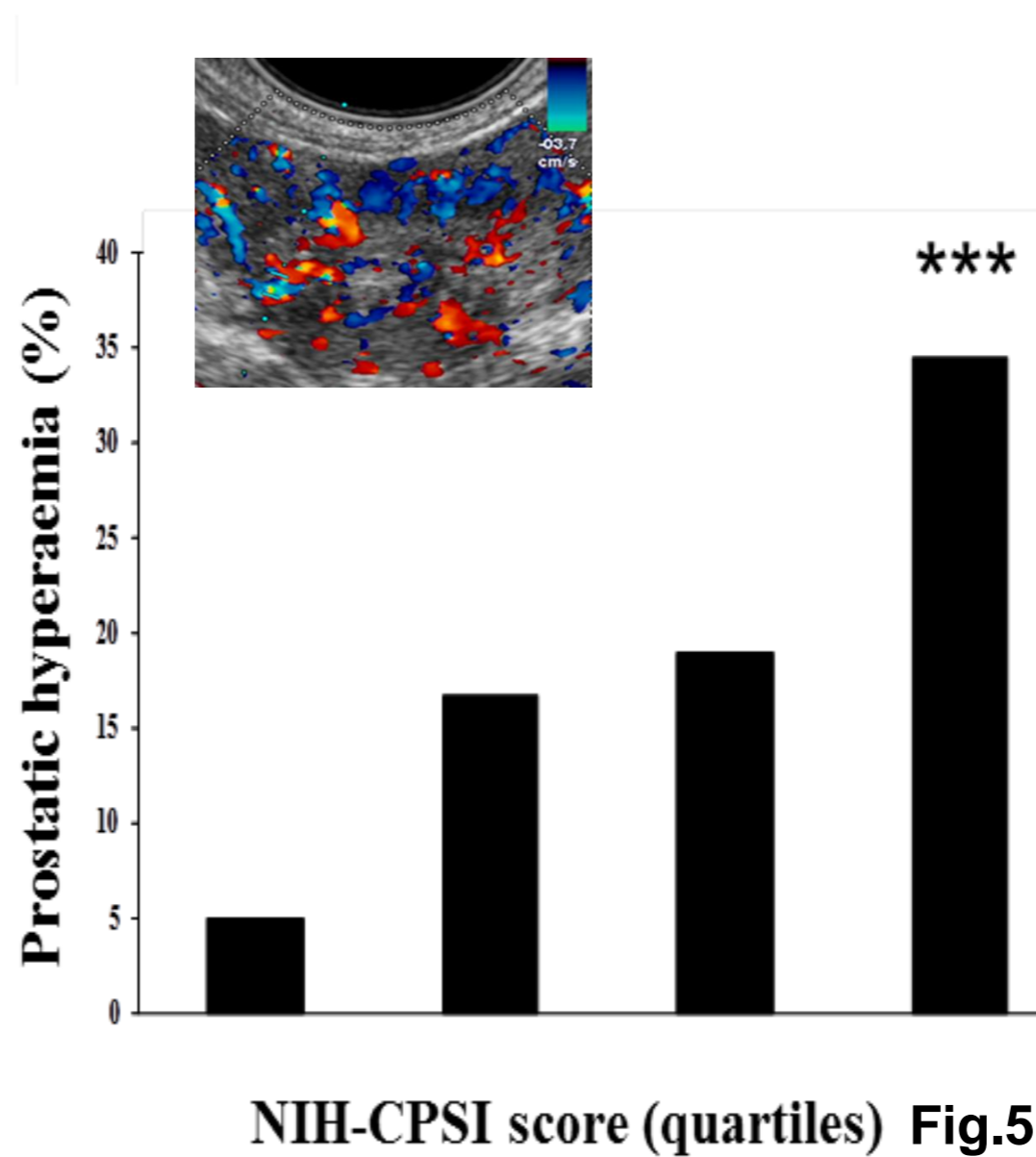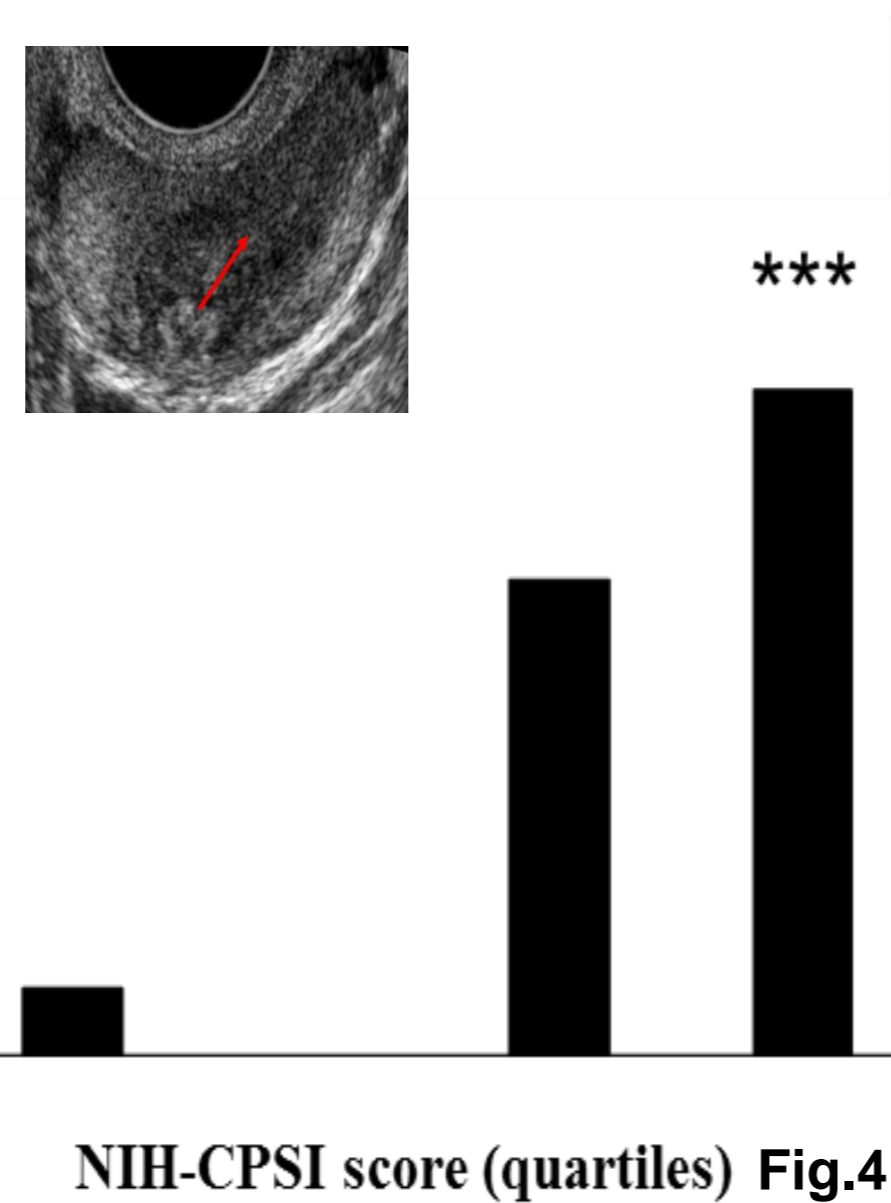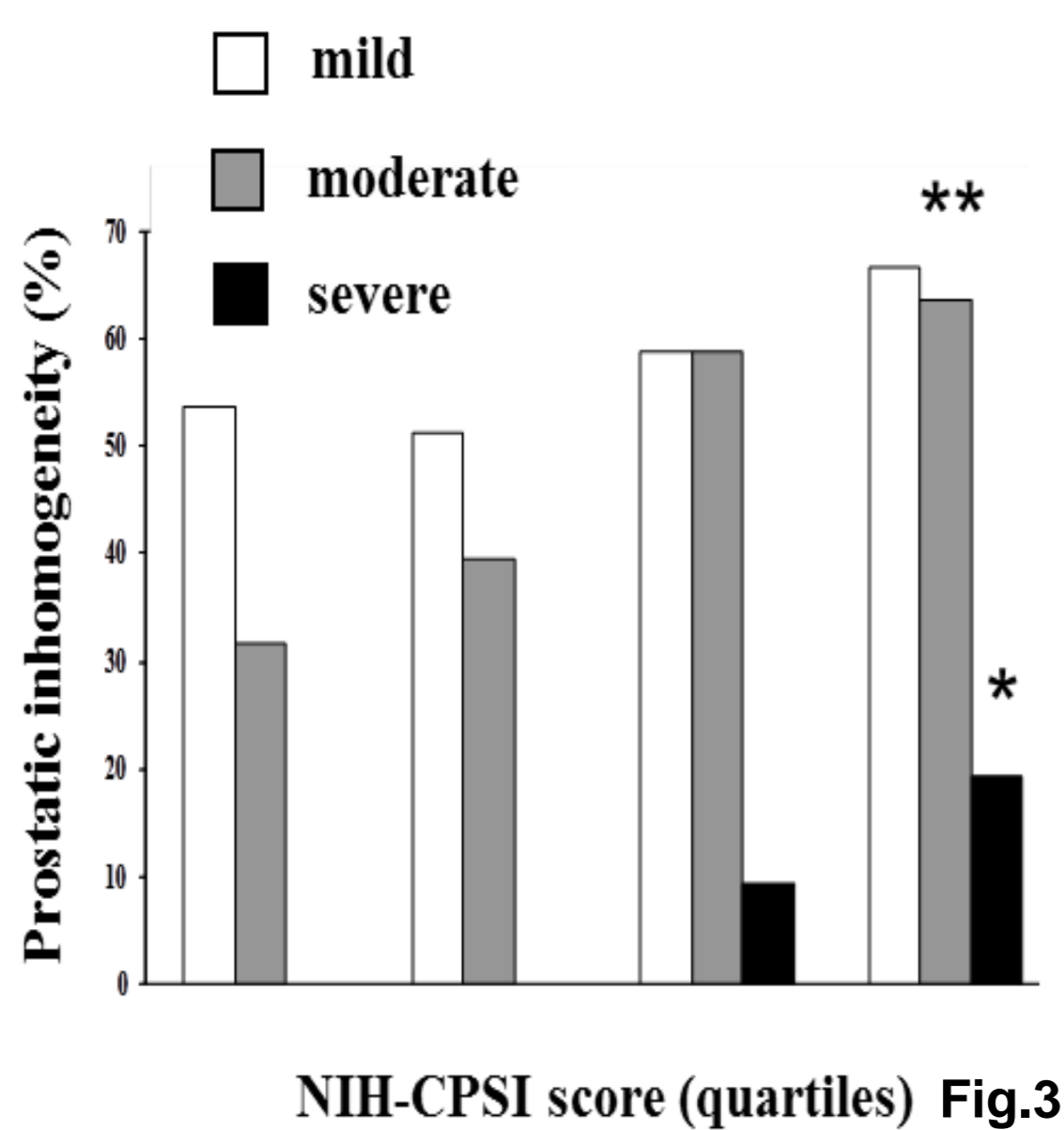- «moderate to severe» symptoms, 56.4% (n=22)
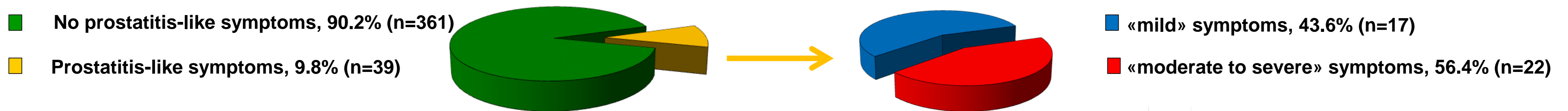
After adjusting for age, a positive association between NIH-CPSI total and current positive urine and/or seminal cultures (Fig.1) and sIL-8 levels (Fig.2) was observed.

After adjusting for age, waist and total testosterone (TT), no association among NIH-CPSI (total or subdomain) scores or PLS and sperm parameters was observed.

* p for trend 0.01
** p for trend 0.001
*** p for trend 0.0001

Fig.1 — Current positive urino- and/or seminal culture (%) vs NIH-CPSI score (quartiles)

Fig.2 — Adj. r = 0.188, p<0.0001; sIL-8 (ng/ml) vs NIH-CPSI score (quartiles)

In addition, subjects with a higher NIH-CPSI total score more often had CDU features suggestive of inflammation of the prostate (including inhomogeneity, Fig. 3; hypoechogenicity, Fig. 4; hyperaemia, Fig. 5 and a higher arterial prostatic peak systolic velocity, APPSV, Fig. 6), of the seminal vesicles and of the epididymis.

Fig.3 — Prostatic inhomogenity (%): mild, moderate, severe vs NIH-CPSI score (quartiles)

Fig.4 — Prostatic hypoechoic texture (%) vs NIH-CPSI score (quartiles)

Fig.5 — Prostatic hyperaemia (%) vs NIH-CPSI score (quartiles)

Fig.6 — Adj. r = 0.305, p<0.0001; APPSV (cm/sec) vs NIH-CPSI score

When subjects with PLS were compared to the rest of the sample, they more often had a positive history of genito-urinary diseases, current positive urine and/or seminal cultures and higher sIL-8 levels, along with prostate-vesicular and epididymal abnormalities.
As assessed by receiver operating characteristic (ROC) curve, at 10.4 cm/sec APPSV discriminates subjects with PLS with a specificity of 82% and sensitivity of 78%, and an accuracy of 85.3±2.7 % (p<0.0001) (Fig. 7).

When only subjects with PLS (n=39) were investigated, those with moderate to severe symptoms had a higher prevalence of current positive urine and/or seminal cultures (50% vs 0%, p<0.001).

The aforementioned significant associations of PLS were further confirmed by comparing PLS patients with age-, waist- and TT-matched PLS-free patients (1 : 3 ratio).

Fig.7 — ROC curve for prostatitis-like symptoms; APPSV = 10.4 cm/s; Sensitivity vs 1-Specificity

Conclusions:
-NIH-CPSI total score is positively associated with positive urino and/or seminal cultures, higher sIL-8 levels, along with prostate-vesicular and epididymal abnormalities suggestive of inflammation.
-Patients with PLS have a higher prevalence of these abnormalities compared to the rest of the sample.
-We confirm APPSV as a parameter suggestive of prostate inflammation, and propose a 10.4 cm/sec cut-off to predict PLS. Symptoms severity is mainly related to the presence of current positive cultures.