

# Novel software for the clinical management of patients affected by endometriosis



A. Fasciani, S. Reina, M. Costa, G.A. Binda, F. Repetti  
Genova- ITALY

### Valutazione del dolore

**INTENSITA' DEL DOLORE**

MESSUN DOLORE MASSIMO DOLORE

Dolore Mestruale (IDM)

Dolore Pelvico (IDP)

Rapporti Sessuali  
Dolore Rapporti Sessuali (DRS)

IDM-IDP-DRS : **6,67**

**ISTRUZIONI ALLA COMPILAZIONE**  
Traslate l'indicatore visuale per indicare nella scala l'intensità del dolore pelvico.  
La valutazione ripetuta nel tempo deve rigorosamente essere auto-stimata dalla paziente alla quale sono mostrate le valutazioni precedenti se esistenti.

## A1-PAIN ASSESSMENT

### subitems

- Dysmenorrhea (IDM)
- Non menstrual pelvic pain (IDP)
- Dyspareunia (DRS)

### Sensory dimension of pain CDD)

- Throbbing
- Stabbino
- Cramping
- Hot burning
- Heavy
- Tender

### Caratterizzazione del dolore e limitazioni

**Caratterizzazione del Dolore (CDD)**

	nessuno	lieve	moderata	severo
Pulsante				
Traffittivo				
Crampiforme				
Buciore				
Pesantezza				
Gonfiore				

CDD : **3,00**

**Limitazioni da dolore**  
giornate di lavoro e/o lezioni perduti (ultimo mese rif. 30gg)

**Limitazione delle attività quotidiane**

**Nottate di sonno perdute (ultimo mese rif. 30gg)**

LDD : **4,50**

## A2 QUALITY OF LIFE LIMITATION (LDD)

- Work/school days of absence
- Daily activity restriction
- Sleep impairment

## Disfunzioni indotte

### Alterazioni alvo

sincrono ciclo

stitichezza/diarrea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tenesmo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
stitichezza	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
diarrea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
dolore defecazione	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Alterazioni urinarie

sincrono ciclo

stranguria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tenesmo vescicale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
pollachiuria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
disuria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Mal di testa

sincrono ciclo

<input type="checkbox"/> cefalea	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> emicrania	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> cefalea a grappolo	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SPA:

## A3 INDUCED DYSFUNCTION AND PHYSICAL ALTERATION (SPA)

- Alternating constipation and diarrhoea
- Rectal tenesmus
- Constipation
- Diarrhoea
- Rectal pain
  
- Urinary pain
- Bladder tenesmus
- Dysuria
  
- Headache
- Migraine
- Cluster headache

## Valutazione medica

### Visita ginecologica

Utero fisso	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cisti ovarica	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Compromissione Douglas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nodulo vaginale	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dolorabilità pelvica	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

VM:

### Indagini strumentali

<input checked="" type="checkbox"/> CA-125	<input type="checkbox"/> POS
<input checked="" type="checkbox"/> ECO - Ecografia	<input type="checkbox"/>
<input type="checkbox"/> CA-19.9	<input type="checkbox"/>
<input type="checkbox"/> RM - Risonanza Magnetica	<input type="checkbox"/>
<input type="checkbox"/> RX/TC - Tomografia computerizzata	<input type="checkbox"/>
<input type="checkbox"/> Colonscopia	<input type="checkbox"/>

Risultati POS e NEG si compensano e sono calcolati solo se marcati nella lista

IS:

## B+C PELVIC EXAMINATION (VM)

- Grade of fixed uterus
- Adnexal cyst(s)
- Grade of Douglas tenderness
- Presence of infiltrating nodule(s)
- Grade of pain at digital exploration

## DIAGNOSTIC EVIDENCES (IS)

- Ca 125
- Ultrasound findings
- Ca 19.9
- Magnetic resonance imaging
- X ray/CT scan findings
- Colonscopy findings

### Figure 3 - Binary to weighted scalar score of diagnostic exams

The check-list indicates whether or not an examination was done while the [POS] column on the right will be flagged to signify a positive response. Eventually, pending on the response of the assay collection of indicators, this section IS might assume negative values.

Indagini strumentali	POS
<input type="checkbox"/> CA-125	<input type="checkbox"/>
<input checked="" type="checkbox"/> ECO - Ecografia	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> CA-19.9	<input checked="" type="checkbox"/>
<input type="checkbox"/> RMN - Risonanza Magnetica	<input type="checkbox"/>
<input type="checkbox"/> TC - Tomografia computerizzata	<input type="checkbox"/>
<input checked="" type="checkbox"/> Colonscopia	<input type="checkbox"/>

IS: 2,50

Legend : image report a screen-shot of Italian version of the software prototype

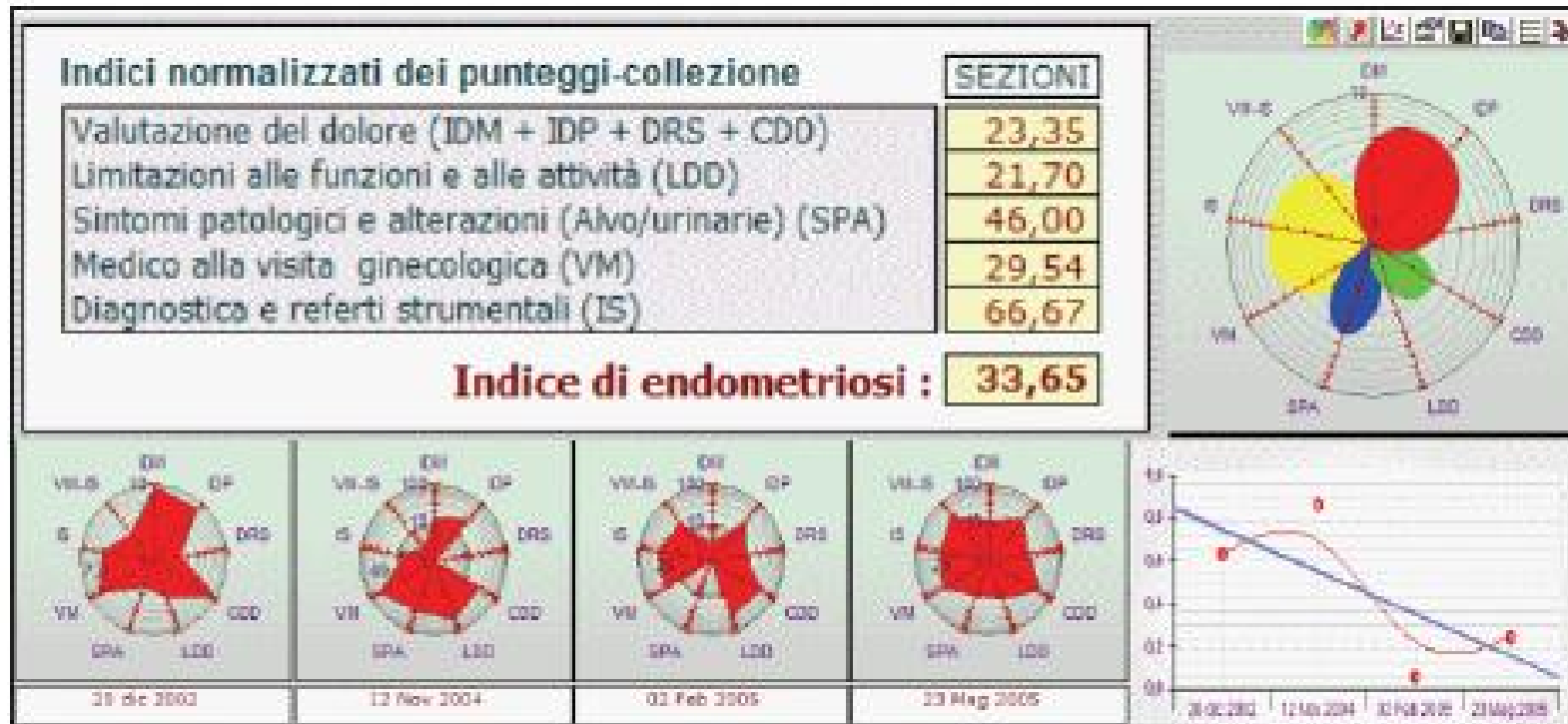
### Figure 4 - Negative collection's score of diagnostic exams outcomes

The check-boxes flagged indicate accomplished or available investigation report. The [POS] column shows only one suspicious CA19.9 flag while other result are negative. Because each exam has a relative 2.5 value (2 times and an half fold), this will be summarised when positive and subtracted if negative; this explain why the IS collection score is negative. Note that the colonoscopy was ignored in that was not considered and this account for the case in which a variable assumes the *nil* meaning.

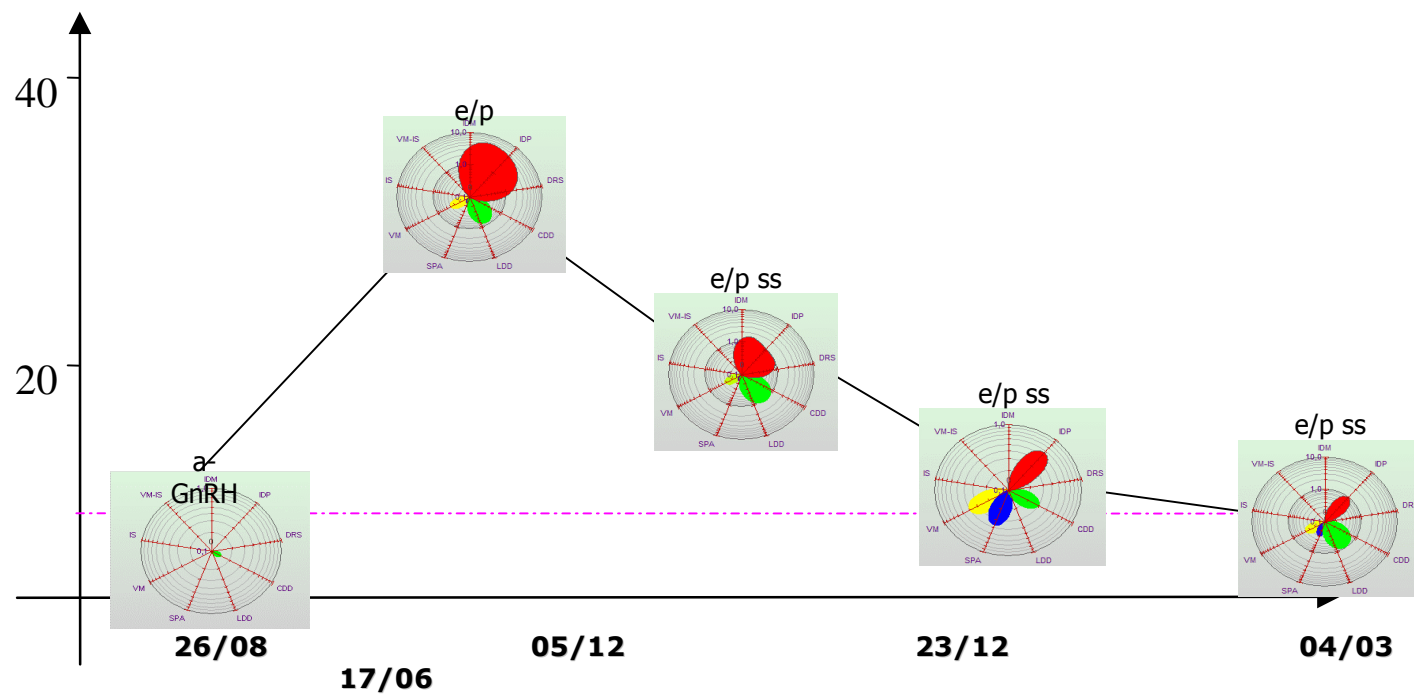
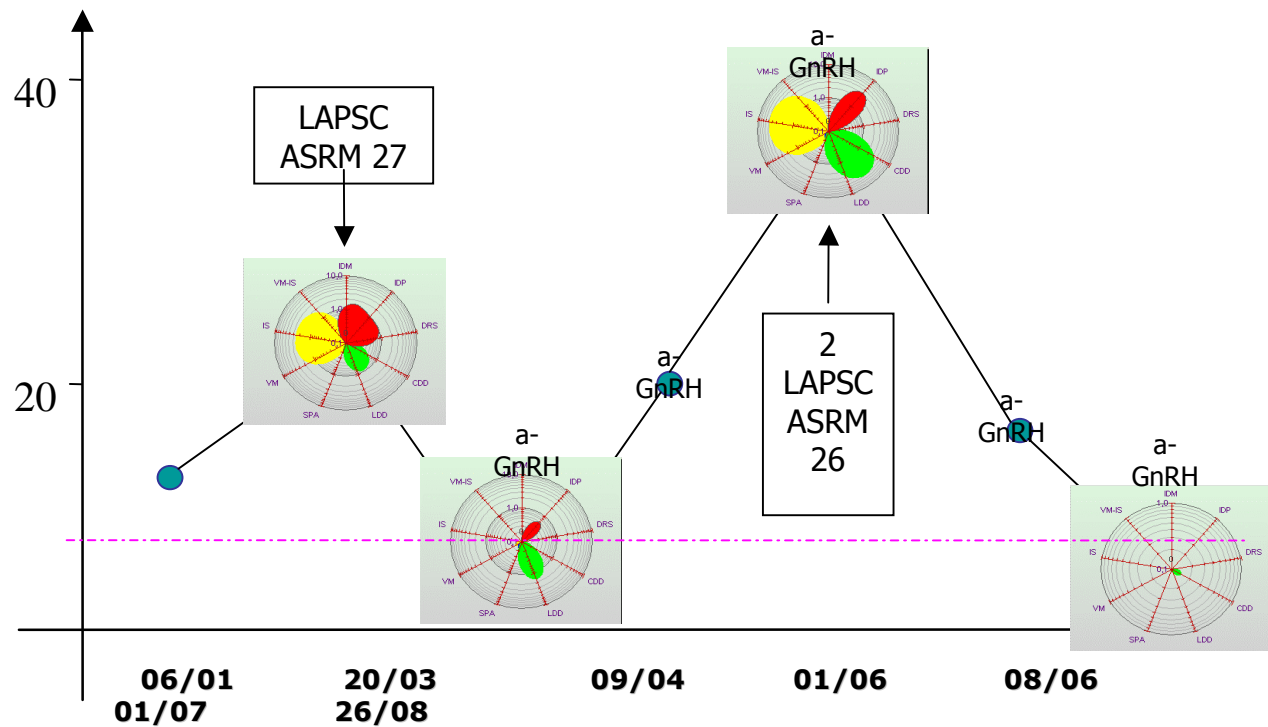
Indagini strumentali	POS
<input checked="" type="checkbox"/> CA-125	<input type="checkbox"/>
<input checked="" type="checkbox"/> ECO - Ecografia	<input type="checkbox"/>
<input checked="" type="checkbox"/> CA-19.9	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> RMN - Risonanza Magnetica	<input type="checkbox"/>
<input checked="" type="checkbox"/> TC - Tomografia computerizzata	<input type="checkbox"/>
<input type="checkbox"/> Colonscopia	<input type="checkbox"/>

IS: -7,50

A summary panel of one case follow-ups graphically shows the complete pattern of a case; starting from its first interview the patient is monitored and the endometriosis evolution can be visualised either quantitatively or qualitatively over a periodic outcome EI



Curve is a smooth plot according to polynomial square fitting of values series (red curve). The software can optionally visualise the ordinary linear regression curve (blu line)



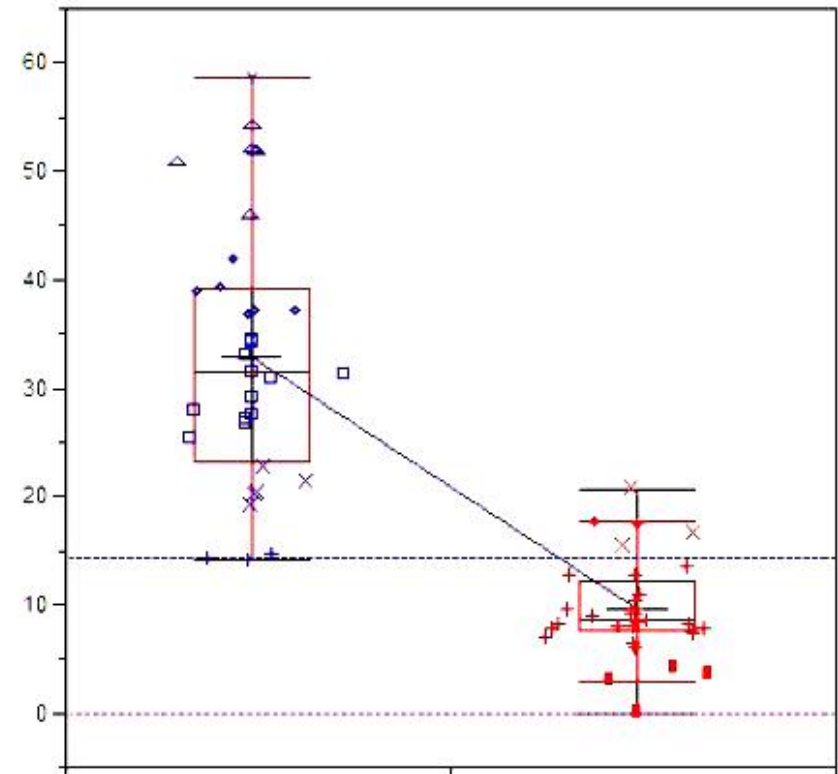
Endometriosis Index	E.I.	
Absence of endometriosis	6.3 (2.4 - 24.8)	} p < 0.0001
Endometriosis pre surgery	21.4 (2.3 - 58.5)	
Endometriosis post surgery	3.7 (1.1 - 16.4)	} p < 0.0001

Pre-surgical EI values also showed a modest yet significant correlation to the ASRM scores calculated at the time of surgery (R=0.55, p < 0.0001).

Cumulative distribution of EIs average values		
peritoneal	ovarian	deeply infiltrating
10.6 (2.9-32.6)	19.5 (2.3-40.1)	35.7 (23.8-44.8)

ns

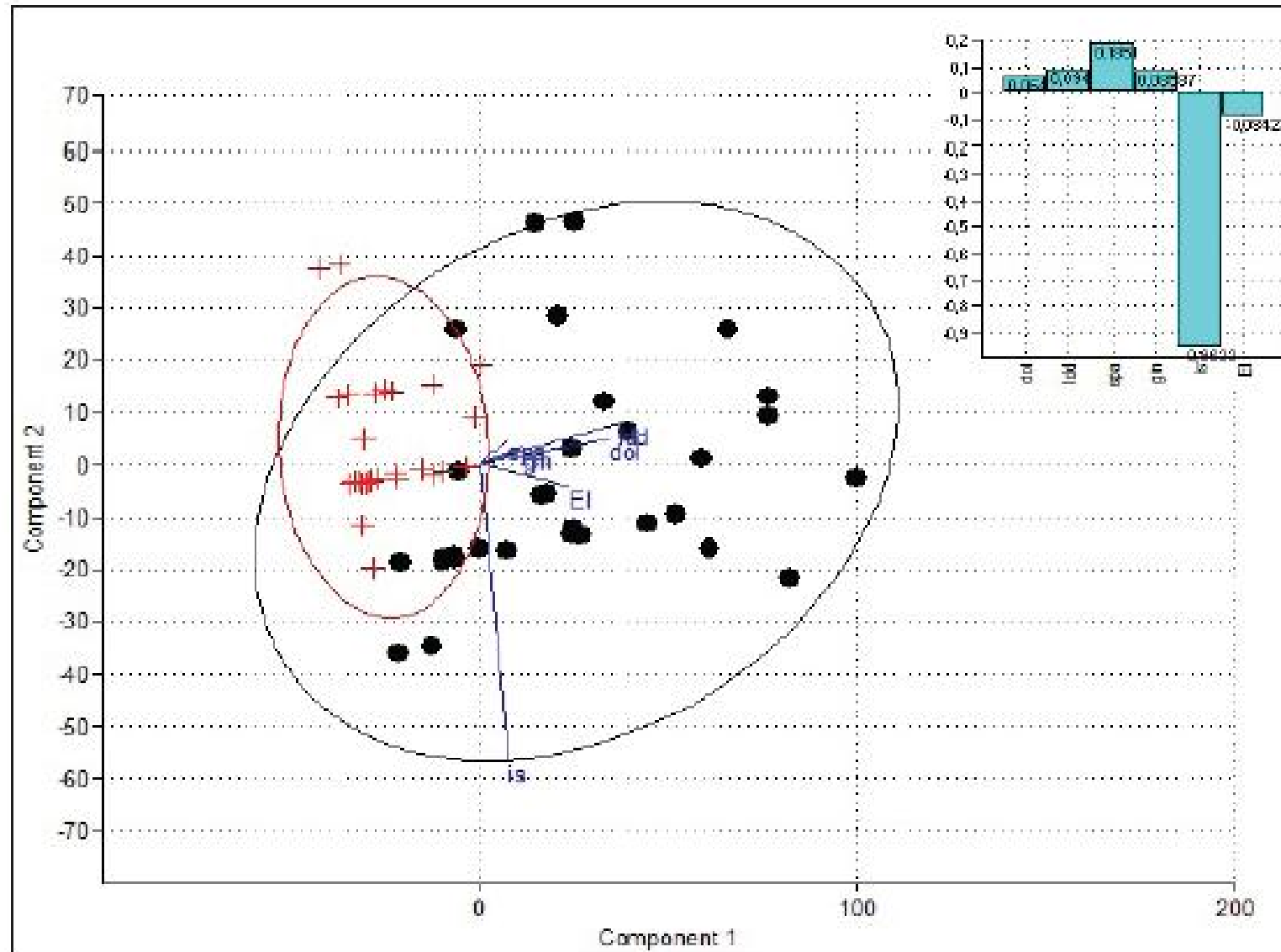
p < 0.0001



### Figure 7 - PCO and PCA on EI and its indicators multi-variate Per/Post samples

A discriminant contribute of the EI indicators was evaluated on the pre/post (black dots and red cross) EI comparison according their bi-dimensional segregation of derivative covariates (second component, 1+2 effects of Eigenvalues).

The chart shows the PCO plot while the bars in the upper right comes from the PCA loadings of second component of Eigen values. Statistics and graphics were achieved by using PAST free software [9].





**Figure 9 – Two-ways Cluster Analysis dendrogram for EI indicators parentage**

Multi-factorial analysis was demonstrated with dendrogram by using the sample studied in Figure 7 (black and Red labels refer to Pre/Post EI values of 35 patients). Pink elliptic area shows the components hierarchy.

