2 prix au 29ème congrès de la STGO (2019)

Sperm characteristics of Tunisian men: A 6 years retrospective study (2013 – 2018)

HB Laboratory for medical analyses (Tunis - Tunisia)

ALYSSA FERTILITY GROUP
LE PARTENAIRE DE VOTRE PROJET DE MATERNITE

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Background – Aim

The last study which focused on sperm parameters of Tunisian men goes back to 2009(1). Therefore, our statistical retrospective study could be considered as an update of our knowledge about Tunisian sperm characteristics. These information could be useful for reproductive medicine serving as a new reference to identify "the exact" Tunisian normozoospermia and its various encountered pathologies during the 6 studied years from 2013 to 2018.

Methods

Our study included 18,629 Tunisian men who came to HB laboratory for medical analyses to undergo spermocytogram for any reason between January 1st 2013 to December 31st 2018. All samples were collected in the laboratory. WHO 2010 guidelines(2) for sperm diagnosis and the strict criteria by Kruger-Tygerberg classification for sperm morphology(3) were used to identify normal from pathologic sperm. Sperm Class Analyzer CASA system (SCA - Microptic®) with a Makler® counting chamber were used as a technical support for sperm diagnosis controlled by the same technician for every analysis and supervised by the same biologist during all the period of the study. SPSS 20,0 was used for statistical analyses. all continuous variables were presented in median [min – max] or in Mean ±SD according to their distribution. Linear regression was used to examine trends over time in normal sperm morphology.

A p-value <0.05 was considered as statistically significant.

Results

Table 1: Sperm analysis of total included men over the 6 years of the study

	Total	2013	2014	2015	2016	2017	2018
N (%)	18629 (100)	3767 (20.2)	6746 (36.2)	1649 (8.9)	1130 (6)	2509 (13.5)	2828 (15.2)
Age (years)	37.82±6.76	37.76±6.78	37.64±6.65	37.90±6.62	38.16±6.84	37.99±6.94	38.03±6.87
Volume (mL)	2.1(0-20)	2.2 (0-11.7)	2.2 (0-11.9)	1.5 (0-9.3)	1.3 (0-18)	2 (0-15)	2 (0-20)
Concentration ($x10^6$/ml)	26.45 (0-1092.45)	18.86 (0-694.60)	29.44 (0-1092.45)	32.13 (0-791.21)	30.12 (0-864.02)	23.33 (0-963.67)	28.67 (0-719.37)
Leucocytes $x10^6$/mL	0.5 (0.02-27)	0.5 (0.05-27)	0.5 (0.02-22)	0.5 (0.05-11)	0.5 (0.05-7.2)	0.4 (0.05-27)	0.5 (0.02-21)
Motility prog (%)	38.22 (0-98)	37.05 (0-98)	37.5 (0-96)	44.8 (0-97)	45.45 (0-96)	37.11 (0-96)	37.18 (0-89)
Motility Total (%)	50.40±26.2	50.51±26.5	50.18±26.4	55.49±26.3	53.33±25.9	48.97±26.5	47.87±24.6
Vitality (%)	69.52±18.7	68.63±19.7	68.58±19.2	68.97±19.5	71.65±15.9	71.30±17.2	71.45±17.3
Normal morphology (%)	12.73±7.21	13.46±7.68	13,15±6.53	14.45±8.33	14.51±8.23	12.33±7.40	9.33±7.03

Table 2: Sperm analysis of only normozoospermic men over the 6 years of the study

	Total	2013	2014	2015	2016	2017	2018
N (%)	7537 (100)	1439 (19.1)	2731 (36.2)	717 (9.5)	508 (6.7)	967 (12.8)	1175 (15.6)
Age (years)	37.22±6.65	37.29±6.90	36.97±6.51	36.95±6.24	37.92±7.08	37.43±6.74	37.40±6.61
Volume (mL)	3.17±1.33	3.09±1.25	3.18±1.32	3.19±1.42	2.99±1.14	3.20±1.32	3.29±1.43
Concentration (x106/ml)	62.74 (14.06-675.62	65.10 (14.26 - 408.1)	67.05 (16.05 - 675.62)	62.08 (15.57 - 403.43)	59.25 (13.82-473.53)	54.44 (14.06-419.33)	55.98 (17.67-490.39)
Leucocytes x106/mL	0.40 (0.03- 2.5)	0.45 (0.10 - 1.40)	0.40 (0.03- 2.50)	0.45 (0.10-0.95)	0.40 (0.10-0.95)	0.40 (0.05-1.80)	0.40 (0.10-0.95)
Motility prog (%)	57.41±15.23	57.11±14.67	57.50±15.3	60.18±15.38	60.25±14.8	58.53±15.9	54.75±14.5
Motility Total (%)	70.80±14.43	72.65±13.84	71.24±14.3	73.23±14.35	70.63±13.7	70.33±14.9	66.48±14.2
Vitality (%)	83.70±7.89	84.36±8.09	83.21±8.62	84.19±06.83	83.41±6.23	84.47±7.14	83.31±6.80
Normal morphology (%)	16.60±6.48	18.02±6.33	16.65±5.56	18.65±7.34	18.20±7.09	16.46±6.18	12.82±6.56

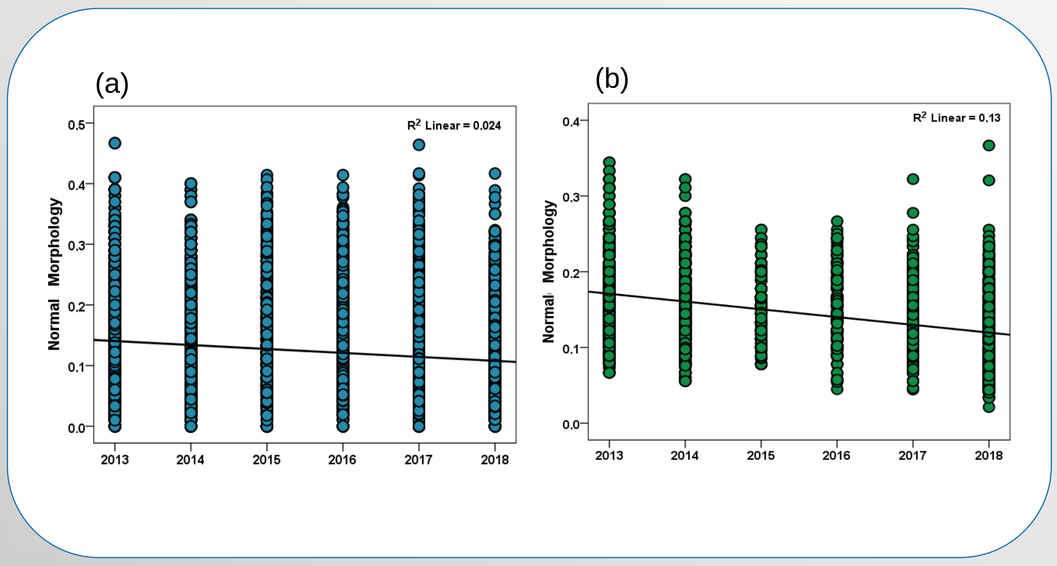


Figure 1: Linear regression of sperm morphology for total studied men (a) and only normozoospermic men (b)

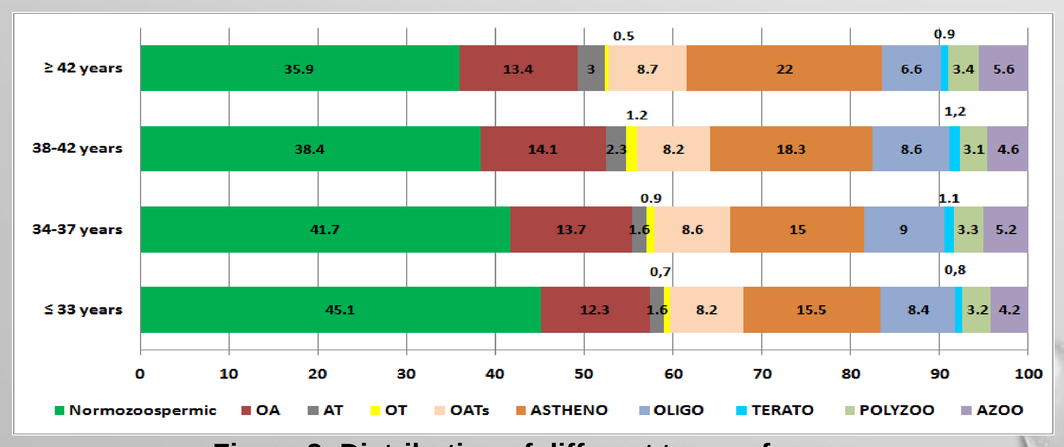
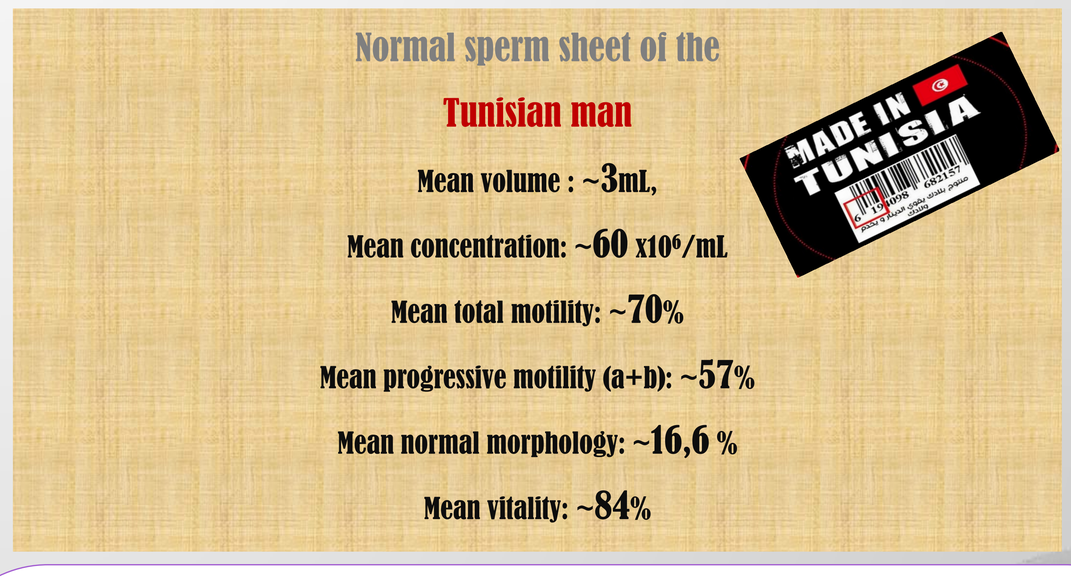


Figure 2: Distribution of different types of sperm (of total studied Tunisian men) according to age factor



Normal sperm **morphology rate** **decreased continuousely during the 6 years** of the study of all included men (a) or only normozoospermic men (b) (Figure 1).

This could be due to various factors such as the impact of **Wifi** and Broadband **3G and 4G** (**54% of mobile connections in Tunisia**).

In fact, **68%** (49,4% of male population) of the Tunisian population use internet in 2018 with an **increase of 23% of internet users from 2017 to 2018**(4).

Mobile phone network (score **51,65/100** of mobile network infrastructure) also could have a **negative impact on sperm quality** (149% of mobile connections of the total population with 60% of active mobile internet users and an increase of 14% from 2017 to 2018(5)) as it was suggested and demonstrated previously by different authors(6 – 8).

High temperatures, smoking cigarets, alcohol drinking, pollution and stress also could alter sperm quality(9).

We have demonstrated that **age** has an impact on sperm motility (15,5% of asthenospermia for men <33 years old vs 22% for men >42 years old ; **p<0,05**); these results are supported by **Shabani et al**(10) who worked on Iranian men and revealed that **sperm motility was affected by age**.

Conclusion

This poster is **the first publication** (since 2009) which gives the **normal sperm sheet of the Tunisian man** and a detailed analysis of the Tunisian semen during six years of study (2013 – 2018). Our data may serve to understand the causes of the increase in the number of Tunisian couples who consult for infertility and especially for **male infertility** over these last years. Lifestyle, pollution and radiations are the most pronounced factors that could degrade sperm quality.

Age alters only motility but not other sperm parameters for Tunisian men.

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