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P-053  Sperm chromatin integrity in men from infertile couples with teratozoospermia and normozoospermia

V. Bozhedomov1,2, N. Lipatova2, G. Bozhedomova3, R. Kamarina3, A. Shomarufov1, A. Kamalov1

1Faculty of Fundamental Medicine of Lomonosov Moscow State University, Urology and Andrology, Moscow, Russia C.I.S.
2Kulakov National Medical Research Center for Obstetrics- Gynecology- and Perinatology, Outpatient, Moscow, Russia C.I.S.
3Faculty of Fundamental Medicine- Medical Research and Educational Center- Lomonosov Moscow State University, Urology and Andrology, Moscow, Russia C.I.S.

Study question: What is the relationship between sperm morphology and sperm chromatin integrity (SCI) in patients with normal sperm concentration (SC) and motility (SM)?

Summary answer: SCI violations in form of sperm DNA fragmentation (SDF) and incomplete protamination (IP) are more common in teratozoospermia, even when SC and SM are normal.

What is known already: Deterioration of sperm chromatin integrity in the form of SDF and IP are the significant factors affecting male reproductive potential (WHO, 2021).

Study design, size, duration: This multicenter retrospective cross-sectional study included 479 men aged 18-45 years who were observed for infertility for more than 1 year.

Participants/materials, setting, methods: Only men: 1) with sperm concentration and motility that were not lower than the 5% centile according to WHO-2021 (16 million/ml and 30%, respectively), 2) without any inflammatory processes in genitourinary organs, 3) with obtained tests for SCI were included in the study. The men were divided into 3 groups (gr.) depending on...
the percentage of morphologically abnormal forms: I - 86-95% (n = 229), II - 96-99% (n = 228), III - 100% (n = 22).

**Main results and the role of chance:** The mean SDF in groups I, II, III were 9.0% (6-15), 12.0% (8-16) and 16.5% (13-20) ($p_{I-II}^{III} = 0.009$; $p_{II-III}^{I} = 0.002$; $p_{III}^{II} = 0.001$), respectively. SDF index (Halosperm Assay) in groups I, II, and III were 1.3 (1.2-1.5), 1.4 (1.3-1.5), and 1.5 (1.4-1.7), respectively ($p_{I-II}^{III} = 0.004$; $p_{II-III}^{I} = 0.001$; $p_{III}^{II} = 0.009$). In 23% (I), 27% (II), and 55% of cases (III) the SDF value exceeded the threshold value (>15%) ($p_{I-II}^{III} > 0.05$; $p_{II-III}^{I} < 0.02$; $p_{III}^{II} < 0.005$). Histone-positive sperm were revealed in 17% (12-23), 19.5% (13-27), and 31% (19-42) of cases in groups I, II, and III, respectively ($p_{I-II}^{III} > 0.05$; $p_{II-III}^{I} = 0.014$; $p_{III}^{II} = 0.02$). The 30% of SDF threshold value was exceeded in groups I, II, and III, in 12%, 20%, and 52% of cases ($p_{I}^{III} < 0.05$; $p_{II}^{III} < 0.005$; $p_{III}^{I} < 0.001$).

**Limitations, reasons for caution:** The reference values of SDF and the proportion of histone-positive sperm have not yet been determined properly, even in WHO 2021, therefore, the prevalence of SCI abnormalities in various spermiological diseases needs to be clarified in the future.

**Wider implications of the findings:** SCI and IP can be applied more widely in the investigation of men from infertile couples, especially, men with teratozoospermia. It should also be considered in men from infertile couples with normal semen parameters.

**Trial registration number:** Not applicable