Endometriosis - The Contribution of the Stroma

Konrad Lutz (DE) [1], Gronbach Judith (DE) [2], Kortum Jessica (DE) [3], Mecha Ezekiel (KE) [4], Berkes Eniko (DE) [5], Omwandho Charles OA (KE) [6], Tinneberg Hans-Rudolf (DE) [7]

1. Context and objective
Endometriosis is characterized by the presence of endometrial glands and stromal cells outside the uterus. However, in very few cases also pure stromal endometriotic foci have been reported. Recently, it was suggested that the stromal cells of the endometriotic foci are different in peritoneal, ovarian or deep infiltrating endometriosis and thus might be causative for the different entities of endometriosis. Thus, we characterized the stromal cell types in normal endometrium and endometriosis.

2. Methods
The prospective study has been approved by the local ethics committee and informed consent was obtained. Tissues from patients (peritoneal, ovarian and deep infiltrating endometriosis) after laparoscopy was used for immunohistochemistry.

3. Results
We found mainly fibroblasts, fibrocytes and mesenchymal cells containing mesenchymal stem cells in the normal endometrium. Whereas fibroblasts and fibrocytes were mainly localized in the functionalis, the mesenchymal cells could be identified primarily in the basalis. Smooth muscle cells and myofibroblasts were commonly found in the myometrium, however, in few cases myofibroblasts could be identified adjacent to endometrial glands from healthy and endometriosis patients. In most endometriotic foci no myofibroblasts were found. However, myofibroblasts were localized adjacent to the endometriotic glands. Of note, we could identify primarily mesenchymal cells directly surrounding the endometriotic glands. In very few ovarian endometriotic glands, we also found stromal protein expression in endometriotic epithelial cells.

4. Conclusions
Whereas in the ectopic stroma a great variety of stromal cells could be identified, the eutopic stroma seems to contain nearly exclusively mesenchymal cells which are highly identical to the basal mesenchymal cells in the endometrium.