A new method of decellularization of human nerve segments, applied to the development of implantable prostheses for the repair of lesions in peripheral nerves.

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INTRODUCTION:
The repair of peripheral nerve lesions is greater when there is a tissue defect that we have to cover. The morbidity and limitation of the autograft opens the way to the search of surgical and biological alternatives.

OBJECTIVE:
Obtain segments of decellularized human nerve by a new chemical method as a basis for the manufacture of biocompatible prostheses usable in the repair of human nerve injuries.

MATERIAL AND METHOD:
The nerves come from organ donors, which are decellularized by chemical method without detergents. The proteins that remain in the acellular segments are determined by electrophoresis and Western blotting. These prostheses are subsequently implanted in receiving Wistar rats, in which a 7 mm defect is made in the sciatic nerve. The implants are maintained for a period of 2, 4, 8 and 16 weeks. After the sacrifice of the animals, the analysis of the samples is completed by histological study (light and electronic microscopy) and immunohistochemistry.

RESULTS:
Our decellularization method manages to eliminate Schwann cells, perineural and endoneural cells, preserving the extracellular matrix due to the absence of detergents. But its implantation in rats has triggered important inflammatory reactions, superior to allogenic implants.

DISCUSSION:
Our method of decellularization seems adequate for the development of allogeneic prostheses for clinical use. A biological study has been initiated to establish which part of the defensive reaction that leads to implanting the human prosthesis in rats is due to interspecies answer (xenogeneic), which would not appear in an implant in human nerve (allogeneic).

REFERENCES: