6. Conclusion

In the present work, PC/DC combination has demonstrated damaging effect on nerves as well as other structures such as skeletal muscles and conveying lipolysis in an intense inflammatory and necrotic pathway. Therefore, its usage in the current form carries a high risk/benefit ratio that can't be overlooked. this study casts even a darker shadow on PC/DC generally as FDA yet to approve it.

The current study is a basic lab research that directs its future counterparts to go and find alternatives for surgery in spinal lipomas and other sites of lipomas as well. As for PC/DC in its current dosage form, it is recommended that it should not have a role especially near vital neural structures in de-bulking of lipomas. Also, it should be encouraged to find a way to split PC from DC via finding a new emulsifier or trying a new delivery system for PC. This can provide a more enlightening approach in addressing the true mechanism of lipolysis of PC and can help in getting rid of the possible detergent effect of DC.

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الملخص العربي

الأورام الشحمية في العمود الفقري هي اورام حميدة مع ذروة حدوثها مابين ١٠ و ٤٠ عاما ، ومع ذلك لديها مظاهر عدوانية ترجع الى تأثير حجمها مؤدية الى ضغط ثانوي واعتلال نخاعي ينتج عنه ألم تدريجي وعجز لاارادي وحسي حركي . إن نموها البطيء يمكن تحمله طالما يمكن استيعابها داخل القناة الشوكية لكن عند وصولها للحد الذي لا يوجد بعده حيز لاستيعابها تحدث مظاهر الضغط.

إن العلاج الجراحي للاورام الشحمية في العمود الفقري في الحالات ذات الاعراض تتكون من تخليص الحبل الشوكي مع تقليص حجم الكتلة الشحمية فضلا عن استئصالها كلية، حيث ان تقليص الحجم اصبح متفقا عليه من قبل غالبية جراحي الاعصاب حيث ان الاستئصال الكلي يستلزم تقنية اكثر عدوانية ومعالجة. و مع ذلك فان معدل معاودة ظهورها يصير عاليا بسبب تضخم الخلايا الشحمية المتبقية وهوأقل ما يقال عن العلاج الجراحي حيث تحدث مضاعفات أخرى مثل اصابة النخاع الشوكي وحرمان الحبل الشوكي من امدادات الدم خلال عملية الفصل من الكتلة الشحمية وتسرب السائل النخاعي و القيلة السحائية الكاذبة.

منذ ان افترض بيستور عام ١٩٧٦ أن بحقن العديد من الأدوية في مستويات مختلفة من الجلد يمكن تعظيم آثارها العلاجية موضعيا والتقليل بصورة كبيرة من اثارها العامة اصبح الميزوثيرابي و إذابة الدهون بحقن الفوسفاتيديل كولين والديوكسيكولات مستغلا في مجالات عديدة. إن الديوكسيكولات هو مستحلب طبيعي وحامض ثانوي من الصفراء ينتج من التمثيل الغذائي عن طريق بكتريا الامعاء لحامض الصفراء الأساسي وهو حامض الكوليك. ومن جهة أخرى فإن مادة الفوسفاتيديل كولين هي من فئة الدهون الفوسفاتية التي تدمج الكولين. انها من العناصر الاساسية في الاغشية البيولوجية ومن الممكن الحصول عليها بسهولة من مجموعة متنوعة من المصادر المتاحة بسهولة مثل صفار البيض أو فول الصويا. الفوسفاتيديل كولين غير قابل للذوبان في الماء، وبالتالي يتطلب مستحلب، وهو الديوكسيكولات لإذابته. تركيبة الفوسفاتيديل كولين ديوكسيكولات تم اجازتها للعلاج بالحقن الوريدي للانسداد الوريدي بالدهون في ألمانيا، والآن تستخدم على نطاق واسع كبديل لشفط الدهون للحد من الدهون تحت الجلد. الشحمية في العمود الفقري تمثل دائما تحديا جراحيا، وهذا العمل يهدف إلى إعادة توجيه النهج الجراحية إلى أقل تدخل وطريقا أكثرامنا وبدا ان الميزوثيرابي بتركيبة الفوسفاتيديل كولين ديوكسيكولات قد يوفرالحل.

في هذا البحث ، خضعت ١٠ إناث جرذان ويستر الى الحقن اربعة مرات متتالية بمادة الفوسفاتيديل كولين والديوكسيكولات على مدار أربعة ايام متتالية بعدها تم التضحية بالجرذان في اليوم الرابع وتم استئصال ١ سنتيمتر من ضفيرة الفخذ بطريقة دقيقة وتم تكرار الأمر للعشرة جرذان الأخريات لاستخدامهمن كمجموعة ضابطة حيث تم حقنهم بمحلول ملحي فسيولوجي. إن العينات المستخلصة من جرذان ٦ من كل مجموعة تم اجراء دراسة بالمجهر الضوئي عليها وكانوا أيضا موضع التحليل الحصائي النصف كمي لتقييم الالتهاب، ونخر، والتليف وتلف الأعصاب، أما الأربع عينات المتبقيات من كل مجموعة فقد تم دراستهم بالمجهر الالكتروني لتقييم العناصر العصبية الدقيقة.

مقارنة بالمجموعة الضابطة التي تم حقنها بالمحلول الملحي فان حقن ٠.١ مللي من مادة ليبوستابيل في اربية أصل الفخذ الأيمن لأربعة مرات متتالية على مدار اربعة ايام وحول عصب الفخذ سببت تكثيف لخلايا الدم البيضاء ومسببة التهاب شديد بالعضلات وترسيب الياف الكولاجين معطيا علامة مبكرة لحدوث تليف. هذه الكرات البيضاء قيدت الحزمة العصبية مما ادى لحدوث ضرر عصبي كبير. وتسبب الاتهاب الشديد بنخر كبير في النسيج الدهني والعضلي. وبدراسة التركيب الدقيق للانسجة العصبية في منطقة الحقن باستخدام المجهر الالكتروني تبين وجود خلايا ليفية داخل الالياف العصبية وانحلال شديد للمايلين. ترافقت الخلايا الليفية داخل العصبية وانحلال المايلين مع ترسب ألياف الكولاجين داخل الاعصاب واعتبارها بذلك علامة مبكرة للتليف العصبي. لقد تأثرت خلايا شوان بالحقن الموضعي لمادة الليبوستابيل ايضا مسببا انحلال للمايلين بها. ولم تسلم الاوعية الدموية الداخل عصبية ايضا حيث ظهر عليها زيادة سماكة جدرانها كما اظهرت المقاطع التهاب بطانة العصب.

بدأ نقاشا خلال السنوات القليلة السابقة عن سبيل تحلل الدهون بواسطة الفوسفاتيديل كولين و الديوكسيكولات وهل هو عن طريق موت الخلايا المبرمج ام عن طريق النخر. و قد أقترح البحث الحالي و أبحاث أخرى ان العملية المسئولة عن التحلل الدهني تتعدى مجرد موت مبرمج للخلايا. و حتى الآن لا يوجد توضيح لالية عمل الفوسفاتيديل كولين ديوكسيكولات بشكل قاطع. لذلك يؤكد هذا العمل على أن إستخدام الفوسفاتيديل كولين و الديوكسيكولات غير آمن لإذابة الدهون و علاج الأورام الشحمية وخاصة القريبة من الهياكل العصبية حيث ان لها تأثيرات شديدة منها انحلال المايلين والالتهاب الشديد وانحلال خلايا شوان غير تأثيرها الضار موضعيا على العضلات والاوعية الدموية ولذلك لا يمكن الاعتماد عليها في تركيبتها الحالية فلربما يتم العثور على وسيلة اخرى لحمل الفوسفاتيديل كولين في المستقبل حيث أن معظم الآثار الجانبية تعزى إلى الديوكسيكولات.